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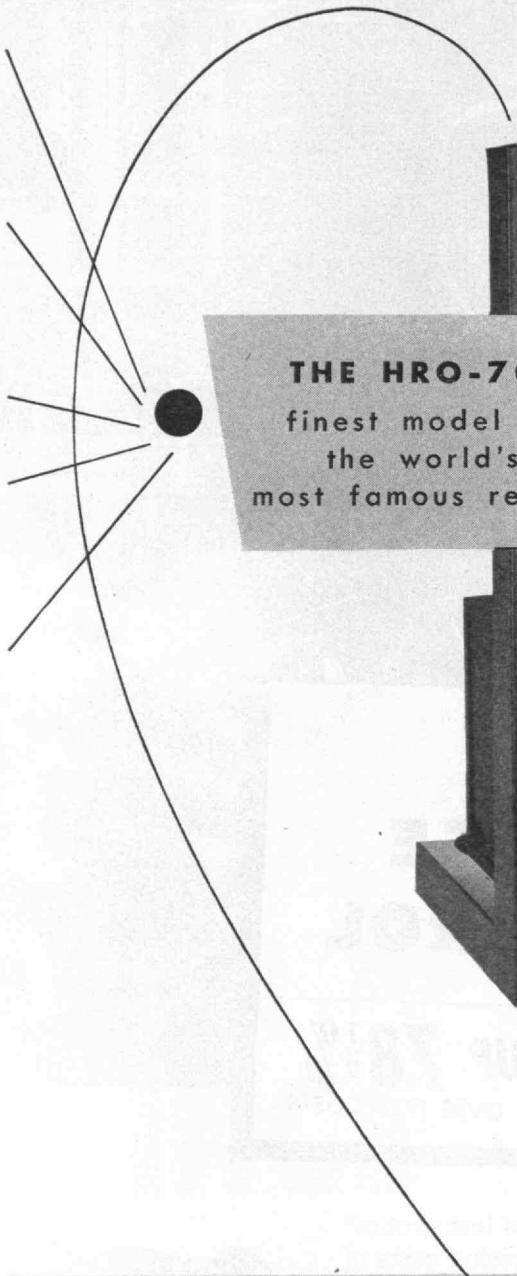
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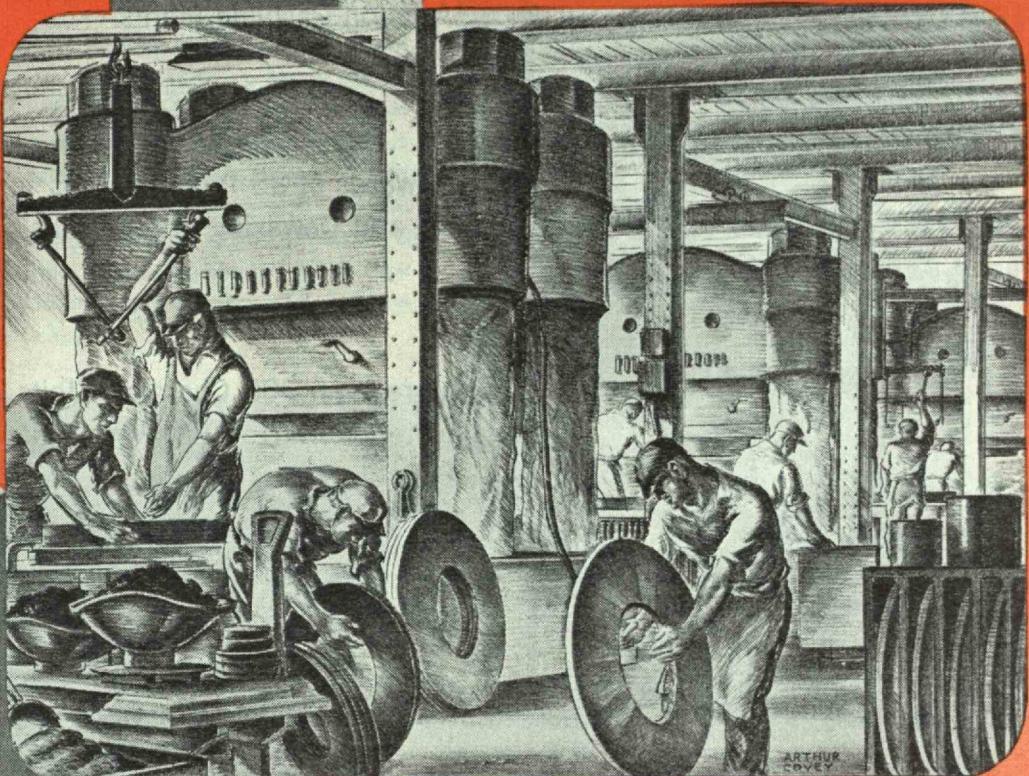
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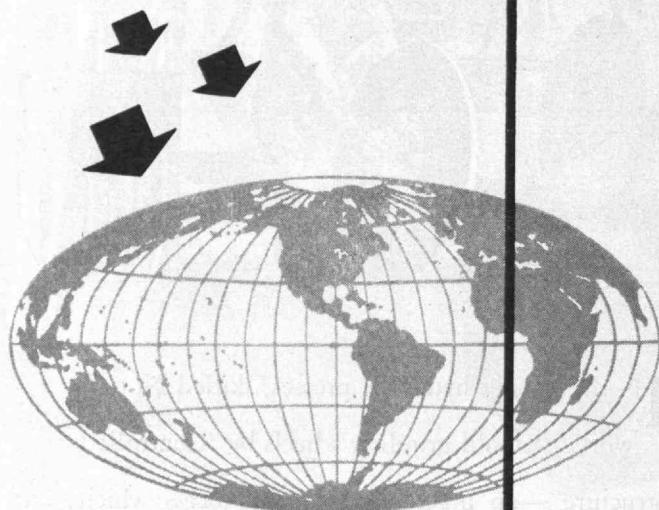
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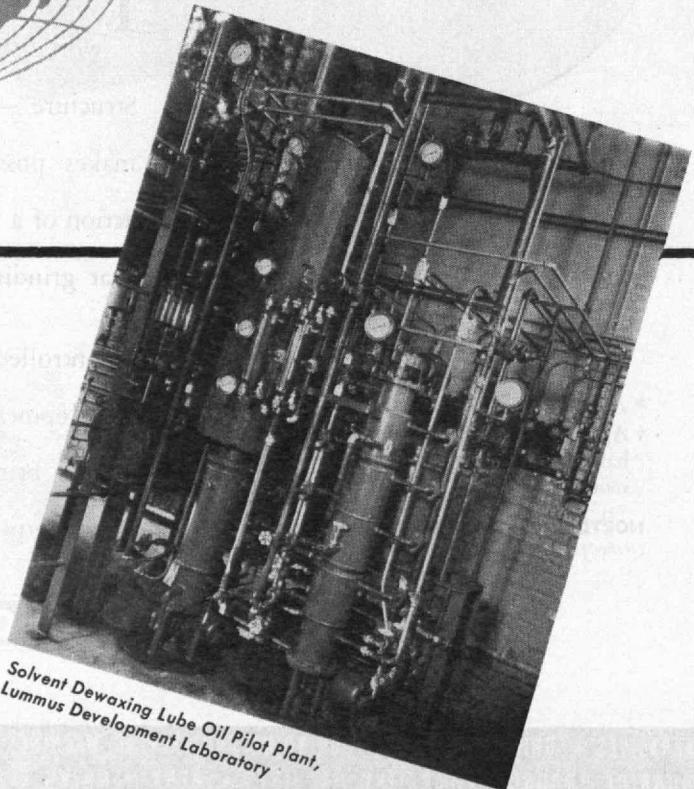
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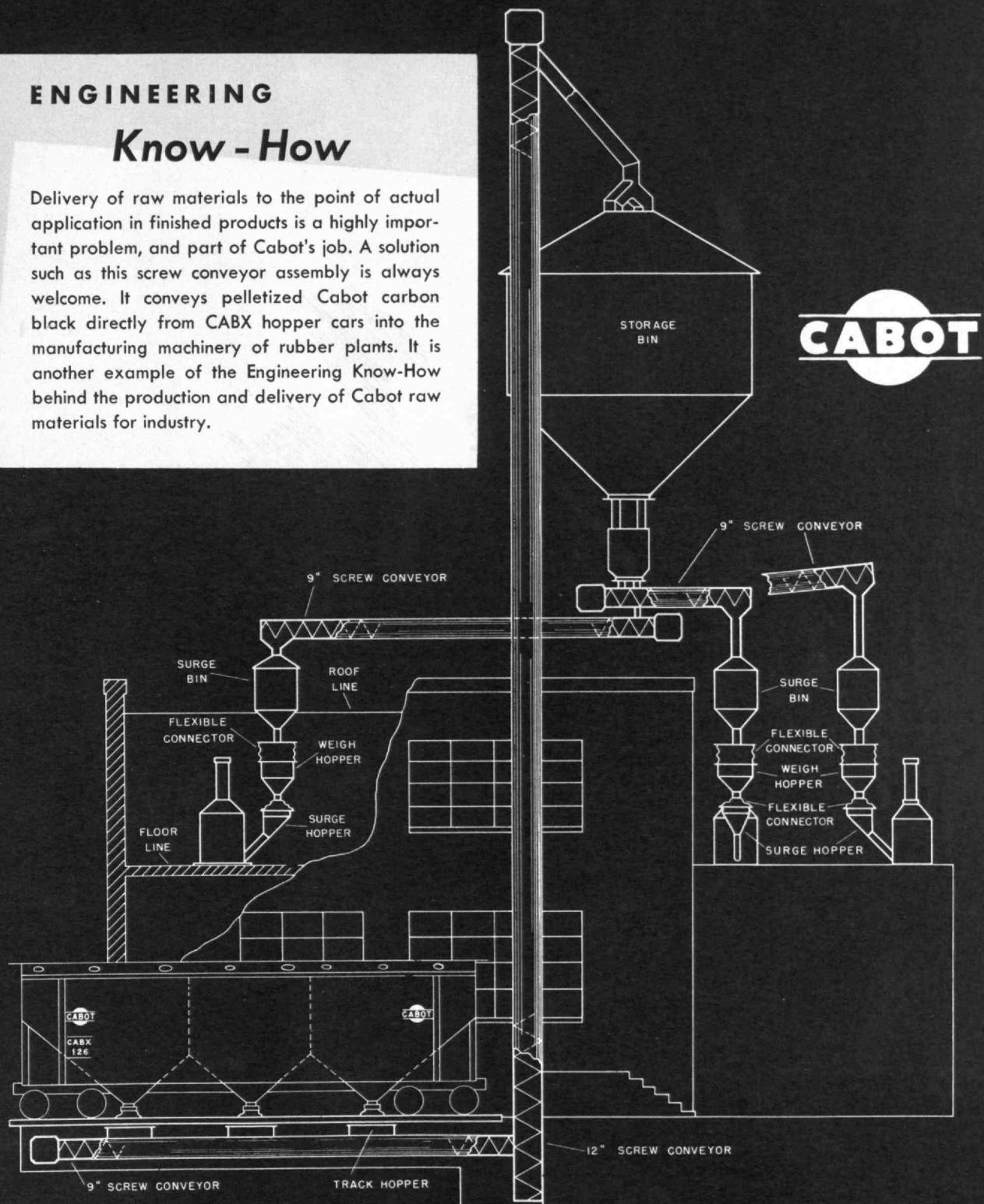


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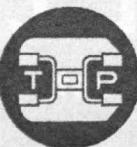
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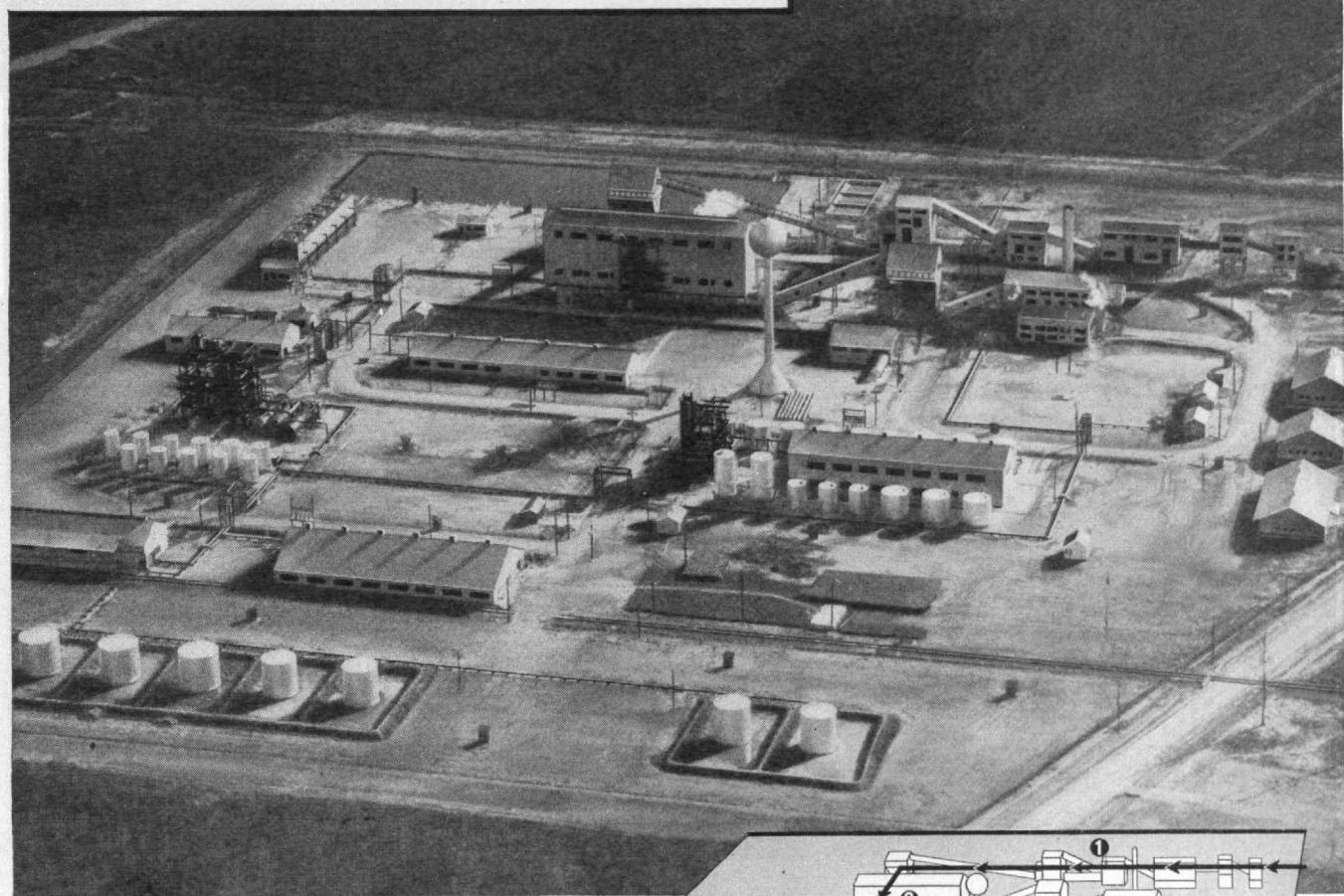
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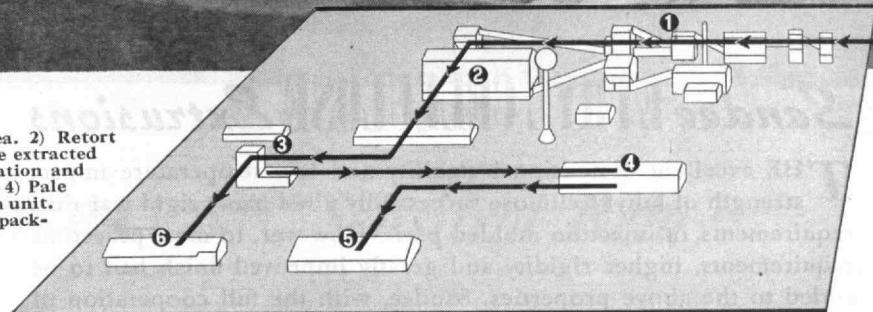
TAKE IT TO TAFT-PEIRCE

DESIGNED FOR PROCESSING



© Photograph by Elwood Payne

1) Wood preparation and grinding area. 2) Retort building where terpenes and rosins are extracted by solvent. 3) Finishing unit for distillation and separation of solvent, terpenes and rosins. 4) Pale rosin decolorization and solution evaporation unit. 5) Rosin packaging building. 6) Oil loading and packaging building.

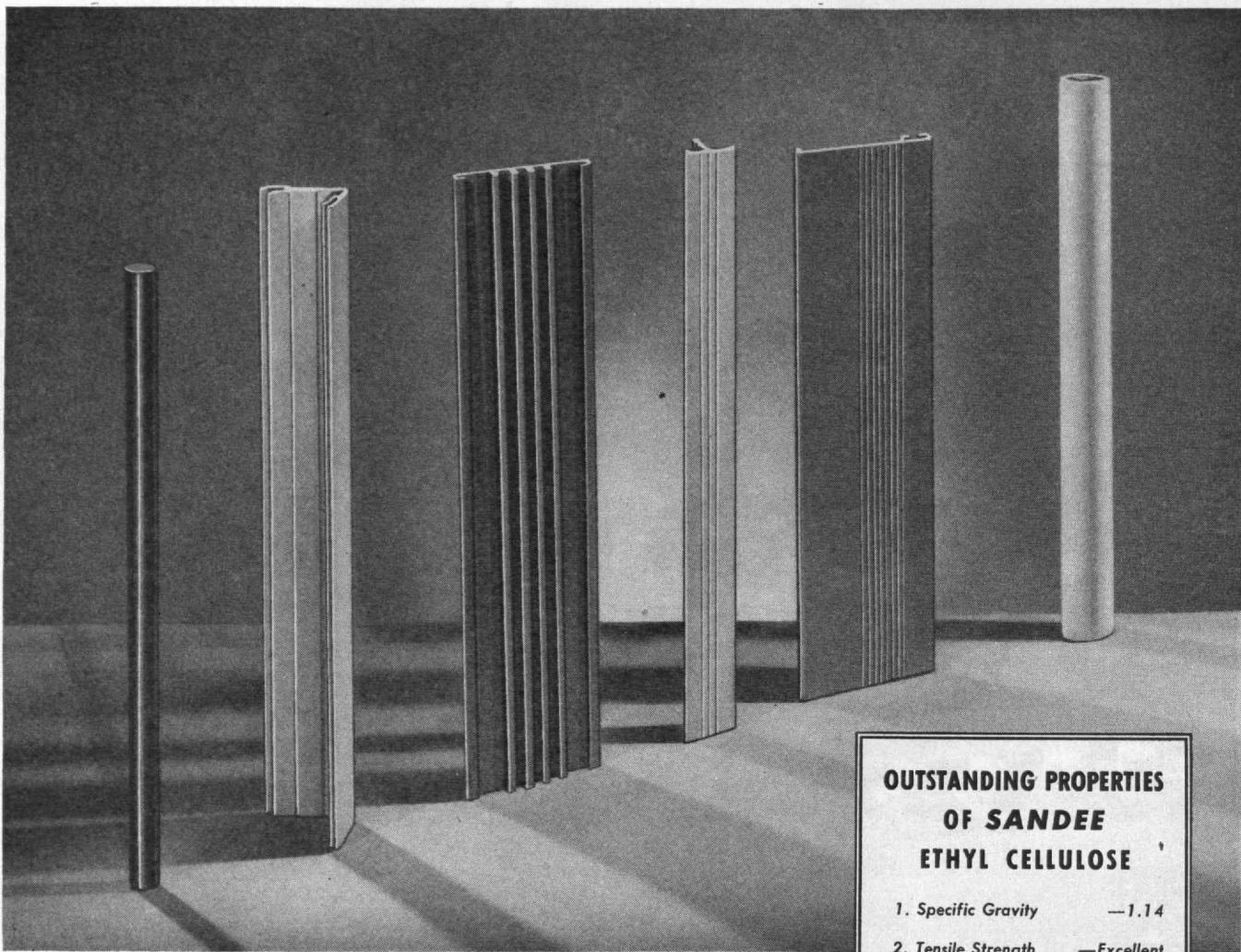


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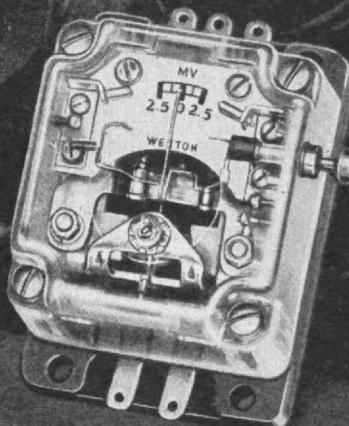
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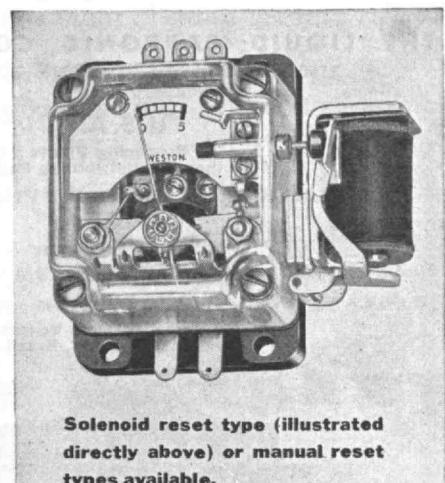
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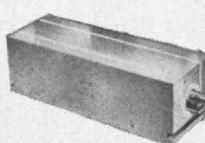
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THE TABULAR VIEW

Egregious Upheaval. — Time was, not so long ago, when we looked forward in anticipation to the postwar period as the promised era of plastic homes, electronic hamburger ovens, and push-button gadgetry which would completely change our daily lives. But somewhere along the line in the past three years we were forced into a detour and now find that present-day realities are different — often quite different — from what had been expected. Probably nowhere is this statement more true than in the field of collegiate education where everyone is strenuously engaged in finding the way back to that tranquil leisure which is the best stimulant for creative advancement. The postwar adjustments now going on in the colleges and universities are comparable, in many ways, to the drastic changes which befell them in the years from 1941 to 1945, but the ultimate effects of the new conversion are likely to be more permanent. In his article "M.I.T. Redeploys for Peace" (page 371), JAMES R. KILLIAN, JR., '26, sets forth the Institute's responsibilities in the training of young men and women for the modern world of technology, and outlines a program, already in progress, for enhancing the Institute's service. Not alone in physical plant facilities, but in the caliber of its Faculty, staff, and curricula as well, is M.I.T. scheduled to embark on a new era.

Three's a Crowd. — Within recent months, newspaper stories have reported new attempts by several persons to solve the age-old problem of Greek geometers; that of trisecting any given angle through the use of a compass and straight edge alone. Perhaps such news presages the rise of a new crop of "angle trisectors" for WILLY LEY recalls (page 375) that solutions to this problem come to public notice with the periodic regularity of the 17-year locusts. But whether we are to be deluged with the layman's discoveries or not, Mr. Ley's article states the problem of the ancient Greeks clearly and, in so doing, aims to put mathematician and angle trisector on the common ground of speaking the same language. Readers will also find a number of methods for dividing an angle into three approximately equal angles. Mr. Ley, an editorial associate of The Review, is a research worker at the Washington Institute of Technology.

Blow Hot; Blow Cold. — Bodily comfort depends on where you are — and what you're wearing. How important the latter aspect is was found out, on a large scale, by the United States Army who went to great lengths to develop suitable textiles for use in the armed services. The conflicting textile requirements, and the methods which fabric designers used to overcome natural limitations, are described (page 378) by STANLEY BACKER, '41, and NORMAN E. ROBERTS. During World War II, Mr. Backer served as research officer at the Philadelphia Quartermaster Depot. Upon his release from active duty as a captain in 1946, he returned to the Institute and received his master of science degree in 1948. Mr. Roberts is a graduate (1942) of the C. M. Price School of Journalism. During the war, he was engaged in historical work at the Philadelphia Quartermaster Depot.



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MAIL RETURNS

Fueling the Railroads

FROM L. J. FITZ GIBBON, '35:

Some time ago I was perusing the March, 1947, issue of The Review and read with considerable interest the article "Liquid Diet for the Iron Horse" which appeared on page 269. I feel that the issue involved was too lightly treated and the conclusion drawn too erroneous to go unchallenged. I decided to query several of my better informed friends in the railroad fraternity to learn their opinion and to obtain some pertinent facts. Therefore, the following facts are offered in rebuttal to the above mentioned article:

Considerable Diesel-electric locomotive expansion has been done through default of the steam-locomotive builders and others responsible, in the industry, for product improvement and advances in design.

In the early 1930's there were more than 40,000 steam locomotives on American railroads, the major number of which were obsolete by modern standards and the majority of which were coal-burning. The steam locomotive, for all practical purposes, monopolized the field of railroad transportation. The coal industry, at that time, sold more coal to the railroads than it did to any other single industry.

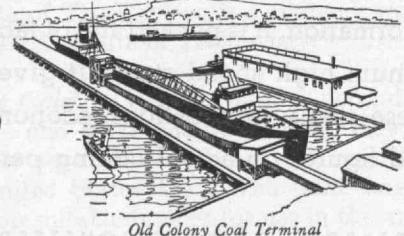
At the time of the advent of the first railroad Diesel-electric locomotive (early 1930's) the coal industry had no interest in fuel economy on locomotives, nor was it much interested in supplying anything but the poorer grades of fuel. It was common practice to use the railroads as outlets for a large volume of low-quality, bituminous coal that could not be sold elsewhere. Often the railroads were practically compelled to accept low-grade coal in order to keep mines along these roads in operation. In fact, the railroads' purchases of locomotive fuel was often the difference between profit and loss for the mine operators.

A number of studies of Diesel *versus* steam have been made but the facts are obscure and the results have been misleading. In only a few exceptional instances have railroads tried to produce a better steam locomotive: in these few instances the results have been excellent. But no major railroad, until quite recently, has taken advantage of ways and means available to make steam locomotives perform better. The coal industry, even today, is only half heartedly co-operating.

There is no doubt that in some instances Diesel power is highly suitable for certain transportation jobs and is preferable to steam. But there now seem to be very good reasons for believing that the purchase of Diesel power at very high first cost, and the cost of maintenance on certain railroads, make this type of power unattractive from the "cost of transportation" angle. Railroads which have had Diesels in service for upwards of 10 years are faced with rapidly rising costs for upkeep and are now looking with favor on other forms of power.

(Continued on page 408)

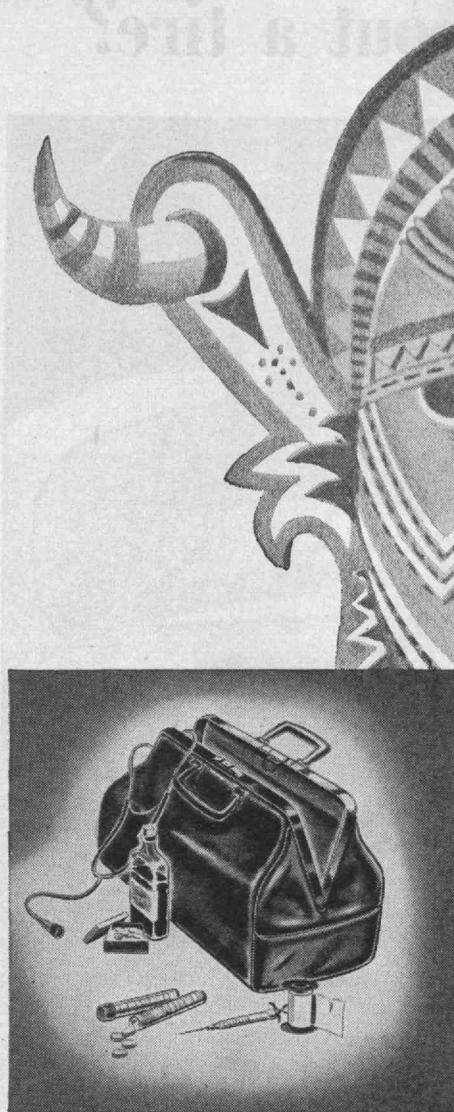
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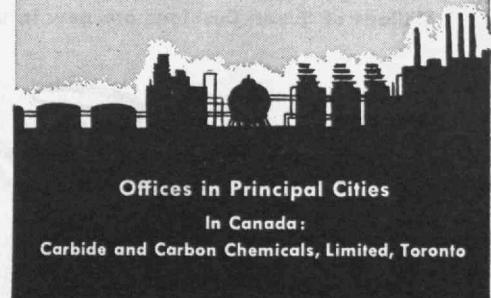
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THE TECHNOLOGY REVIEW

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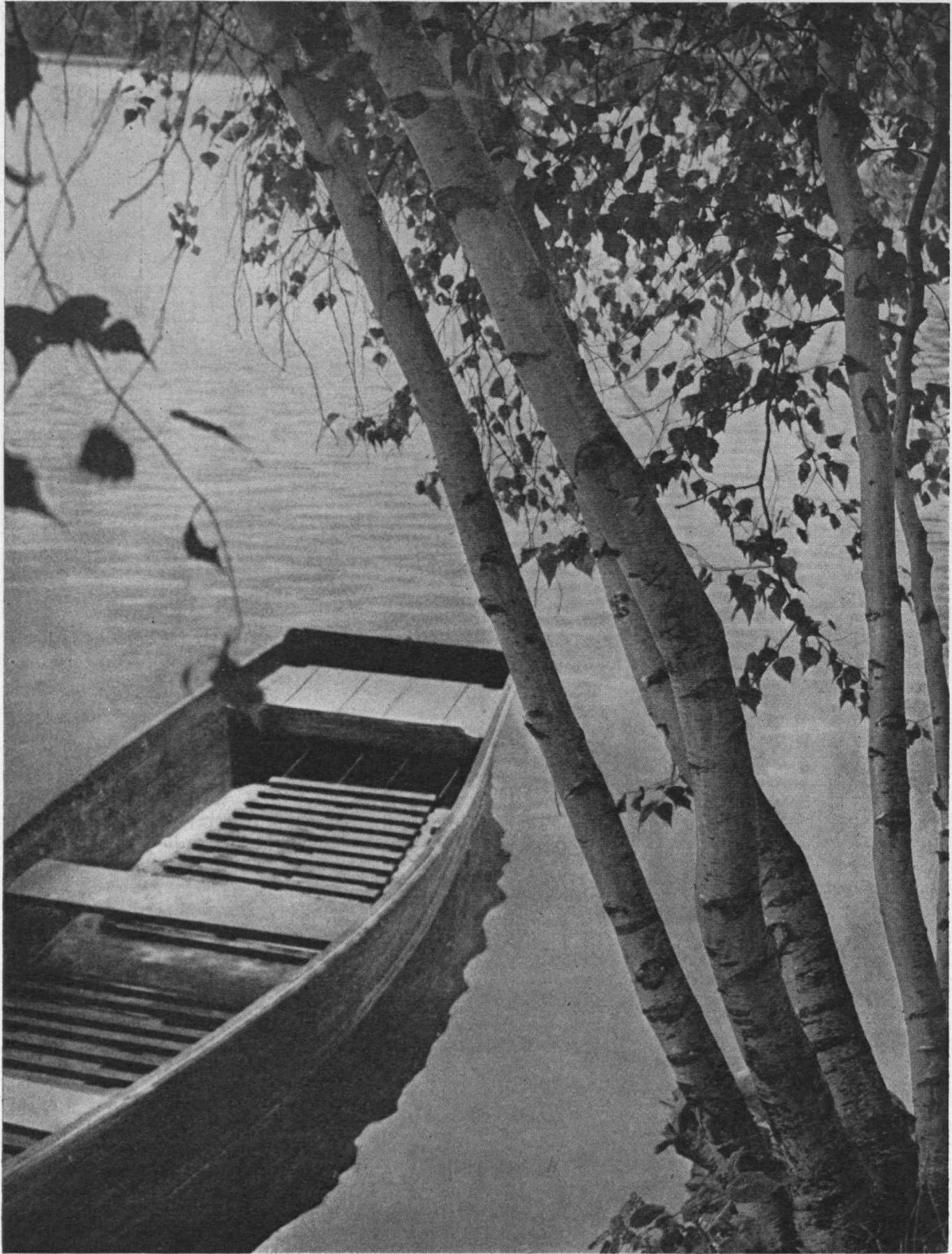
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Paul R. Cunliffe

Invitation to Spring Fever

THE TECHNOLOGY REVIEW

Vol. 50, No. 7

May, 1948



The Trend of Affairs

Obiter Dicta on Man Power

DEMAND for man power has increased 25 per cent in the past eight months, whereas man power in search of work has decreased 20 per cent in the same period. As a result, the man-power shortage is greater now than it has ever been. Such, at least, are the conclusions to be drawn from a study of recent activities of the M.I.T. Alumni Placement Bureau which has widespread contacts with industry and also with highly trained technical and administrative personnel.

Several causes appear to be at work to account for this latest demand for qualified personnel. For one thing, the government has re-entered the field more aggressively than ever and is bidding with industry for a wide variety of technically trained persons. Many organizations, going into fields which are new to them, lack suitably trained men on their staffs to supervise new undertakings or sell new products. In other cases, companies are issuing personnel requests which are admittedly "impossible" but they refuse to consider anyone who doesn't meet the standards which they have established. There is also evidence to indicate that even some of the largest and presumably best organized corporations did not believe that business would continue to boom, for otherwise the mature and well-trained young veterans, hired in the fall and winter of 1945, would now be ready to fill vacancies in supervision which plague companies the most. Finally, it should be recognized that some companies have developed a practice of "shopping around" to determine whether man power would be available if needed; therefore, many jobs which are listed do not represent actual vacancies. It is interesting to observe that the real or fancied demand for technically trained man power has caused a number of engineering and scientific societies to inaugurate employment contact services within the last year.

Under such conditions of a seller's market, it would appear that there should be no supply of personnel from

which to draw. For a number of reasons, however, there is a small reserve. Many who graduated between 1943 and 1947 are growing bored on their training jobs and seek a change. Even those in engineering groups say supervision is so poor that they work hard one week and then spend the next two dull weeks trying to appear occupied. The housing shortage accounts for other manpower availabilities, since it compels a man who must seek a new job to exhaust every possibility within commuting distance of his home.

Apparently companies are getting along by overworking the older, tired, and still underpaid engineers on their staffs and promising them the "perfect man" as an assistant "as soon as they can find him." In the meantime, the vast numbers of young men who have been hired are growing restless because they lack adequate supervision and their capabilities are not used to the full.

If the government's swing into renewed activity in research and development carries on into production, as it seems likely to do, the older, more mature men will be in demand once more. Already there are signs that there will be considerable displacement and enforced job changing among recent graduates now employed in consumer goods manufacture.

In the meantime, the average or slightly better than average man who is over 45 is once more in trouble when he seeks a new position to compare in salary and responsibility with what he has had. Indeed, the most distressing tendency that shows up is industry's abrupt postwar rejection of the older man. Each organization has its own excuses for this, but company insurance rules are blamed more frequently than seems reasonable. When a man who has reached 40 is refused employment for a position of responsibility "because such men have lost their flexibility and have become set in their ways," it is time to look at the company's management to see whether it has not lost its flexibility and dreads being stirred out of its rut by the injection of new blood, sufficiently mature and experienced to meet management at its own level.

Hot Water?

AT BEST, only a handful of the most articulate and energetic readers — and certainly no editor — is ever likely to muster a sufficient array of facts to dispel a widely held view that editorial meat must be sandwiched between the bread slices of advertising for the latter to achieve its maximum effectiveness. Yet, withal, commercial copy does stand very definitely on its own feet — or so we maintain. Indeed, the revenue-producing copy is, not infrequently, more interesting than the editorial grist in the adjacent column, with which it vies.

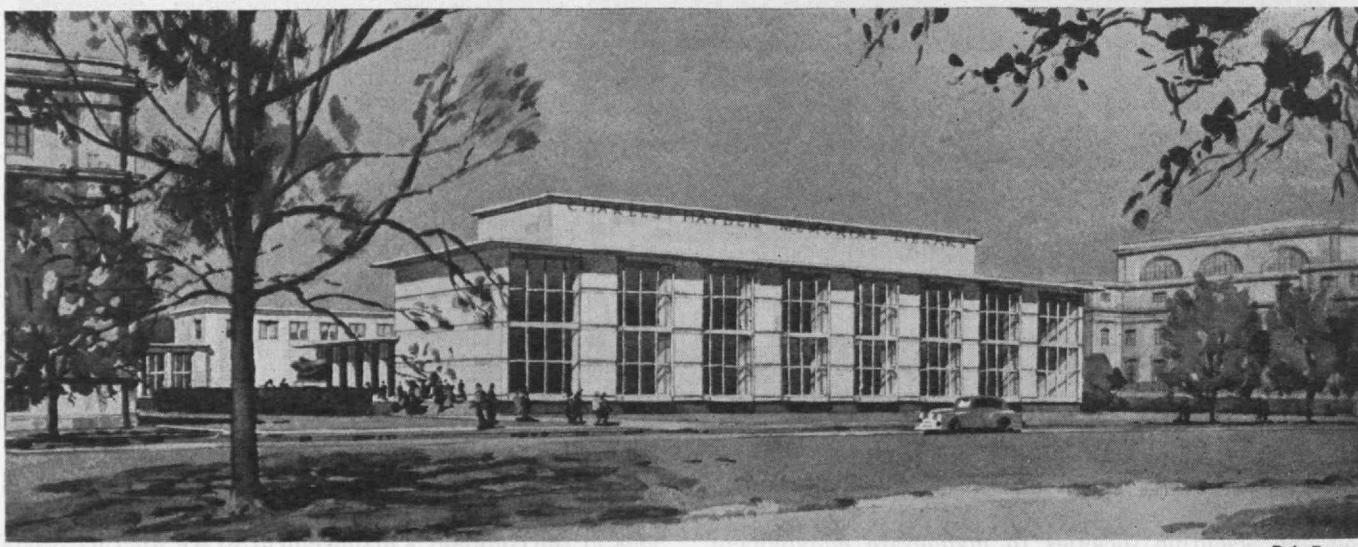
In substantiation of this thesis, we reproduce text from an advertisement which caught our eye in a musty volume of bygone days when, it would appear, publishers enthusiastically inserted folios hawking their wares for pages on which one would expect to find an index. Thus, in *Practical Electricity and Galvanism* by John Cuthbertson, published in London in 1807, two years before Lincoln was born, we find the reader's attention invited to a pamphlet on "Directions for Learning to Swim; by attending to which a Person, who has never been in the Water, may escape being drowned" by Benjamin Franklin, LL.D.

The pithy epigrams of *Poor Richard's Almanack* were widely quoted in our young nation when Cuthbertson's volume appeared, and Franklin's lightning rod and electric kite experiments were respected internationally. So also were his musical glasses and his discovery that Paris was illuminated by a huge natural source in the morning when many a Parisian was still abed. Possibly the spirit of the times forbade open recognition of the international reputation of a colonist, especially in the mother country. At any event, publisher J. Callow apparently felt that Franklin's work would benefit by the burnish of popular acclaim, for in the announcement he included what is evidently a portion of a book review. In a lily-guilding eulogy the reviewer, a Dr. Currie, says: "The authority of the American Bacon is of great weight in Medicine, as in every other branch of Science, that he touches, and particularly in what respects immersion in water; for doubtless he spent more time in this element than any philosopher of modern days."

Colloidal Antibiotics

UNTIL NOW, more than 20 germicides, known as antibiotic substances, have been discovered, but only four of these have proved to be of any value from a medical point of view. Of these, penicillin is the most important not only from the standpoint of having saved thousands of lives but also because it has stimulated intensive research in the general field of antibiotics. Since penicillin was discovered by Fleming and his co-workers in England, a tremendous amount of data pertaining to its applicability has been collected. Very little, if any, information has been obtained regarding its mode of action, however, probably because penicillin is a most evasive and elusive substance.

Until quite recently, most emphasis in all research pertaining to penicillin and its production has been placed on a purely chemical approach. Now Professor Ernst A. Hauser, at the Institute, and his co-workers, Dr. John W. Phillips and Mrs. Ruth G. Phillips, have discovered that solutions of penicillin are not true solutions at all but must be classified as colloidal sols, which are dispersions of many fine particles in a liquid. The new property has been ascertained by systematic ultramicroscopic studies. It has also been verified by the fact that penicillin sols exhibit the very pronounced reduction in surface tension which is typical of colloids, such as soap, which have the property of concentrating in the surface layer of the solution. Penicillin sols must be classified as colloidal electrolytes, for their behavior is similar to that of soaps which have the tendency to adsorb on, or coat, solid matter with which they are brought into contact. Although preliminary bacteriological tests have already shown that the colloidal properties of a penicillin sol possess more than a casual relationship to its effectiveness, no definite answer can yet be offered for its mode of action. It has also been found that the particles of a penicillin sol carry an electric charge, as do other colloidal sols, and such charge may have a direct bearing on bacterial growth. The significance of this finding appears to merit attention, particularly in the medical field, for it has been ascertained that bacteria also may carry an electric charge. (Continued on page 402)



Dritz Duryea

Architects' rendering of the Charles Hayden Memorial Library at M.I.T., the construction of which was begun on April 5. The building, which is expected to set a new standard in library design, will occupy a site between the main educational buildings of the Institute (left) and Walker Memorial (right), facing the Charles River Basin. It is anticipated that the new library will be ready for occupancy in the fall of 1949.

M.I.T. Redeploys for Peace

*Strengthened by an Outstanding Record of War Service,
the Institute Advances Its Educational Program
as Its Major Peacetime Responsibility*

BY JAMES R. KILLIAN, JR.

THE American scholar, to a degree without precedent, became a wandering scholar during World War II. Not only were he and his fellows distributed and redistributed geographically over the face of the earth; they were redistributed in function to a degree without precedent both in civilian and in military capacities.

Never isolated, even in peace, behind an ivory curtain, the M.I.T. staff in World War II became involved and redistributed to a greater extent than that of almost any other American institution. As a result, the M.I.T. staff was more completely diverted from education, although the Institute was actually enlarged as a war research organization. The concentration of war research on its campus, the presence here of a great assemblage of gifted scientists from hundreds of institutions, and the remarkably varied activities of its own staff, in Cambridge and elsewhere, all contributed in one overshadowing way to the establishment of a fresh and vigorous postwar program. No one at M.I.T. during this postwar period can fail to be impressed by the ferment of ideas, the prevailing temper to re-evaluate and to strike out in new directions, and the broadened concept of the Institute's responsibilities which is a direct outgrowth of the wholesale cross-fertilization that has resulted from the Institute's war program. The expanded commerce of thought resulting from these conditions is probably the most profound aftereffect which the war had on M.I.T.

Another effect of these special conditions was M.I.T.'s rapid war demobilization and its equally rapid mobilization for peace. The organization which had functioned to oversee \$100,000,000 of war research was geared to liquidate the war program expeditiously and at the same time to rebuild the long-term educational program. Those who served on the Institute's governing bodies during this period will long remember the excitement and urgency of reconversion. They will remember how a housing program for married veterans — the first in an American college — was planned and started before Federal funds became available. They will remember the improvisations to handle the tidal wave of applicants and how the limited classroom space was painstakingly utilized to the utmost to accommodate more than 3,000 students beyond the number registered at war's end. They will remember the search for new talent in the war-research laboratories, which, with the generous support of the Corporation, quickly brought to M.I.T. a remarkable group of outstanding graduate students and a number of major and

N.B. This article is reprinted from Chapter 20 of the forthcoming book *Q.E.D. — M.I.T. in World War II* by John Burchard, to be published in May by THE TECHNOLOGY PRESS (Cambridge), and John Wiley and Sons (New York).

eminent Faculty appointments. In rapid succession new programs were adopted, as in food technology, in economics, in the humanities, in electronics, and in nuclear science; departments were rebuilt and given new direction, as in the School of Architecture and Planning; new facilities were blueprinted and financing started, as exemplified by the Gas Turbine Laboratory, the Research Laboratory of Electronics, the great Charles Hayden Memorial Library, and the Senior House.

While the staff was thus throwing its released energy into rebuilding the educational and research program, steady progress was being made in demobilizing the war-research organizations and in readapting buildings and equipment in a manner that could best serve the interest of the country and leave the Institute in as strong a position as possible for its expanded peacetime program. Both the temporary and permanent buildings erected for war work have been acquired by the Institute. This added space has not only enabled us to take care of the great increase in the student body but at the same time has both permitted and required a wholesale reallocation of space and renovation of equipment throughout the entire Institute plant. This general redistribution of space — the greatest since the Institute moved from Boston to Cambridge — together with the acquisition of new buildings, has required an expenditure of \$1,750,000. While this has been a very severe drain on the Institute's limited unrestricted funds, the Corporation felt the expenditure was warranted by the resulting gain in educational efficiency.

Adjustment to Expanded Enrollment

The great rush of redeployment after the end of World War II soon came face to face with an overwhelming enrollment of students in numbers greater than the Institute had ever handled before. Prior to the end of the war, two decisions had been reached: (1) M.I.T. would readmit all former students who had obtained leave for war service, and (2) M.I.T. had an obligation to accept a substantial temporary overload of students in order to share, to the limit of its ability and educational standards, in the national policy of providing educational opportunities for veterans. The result of these two decisions quickly became apparent, to an unexpected degree. Former students returned in larger numbers and more quickly than had been expected. Nearly 95 per cent decided to return to the Institute and in the fall of 1946, when but 700 had been expected, a total of 1,100 actually registered. In the meantime, applications were pouring in from veterans at a rate of about 4,000 a month for nine months and the tapering off has been at an astonishingly low rate. As a result the Institute found itself with 5,660 students in the



No one at M.I.T. during this postwar period can fail to be impressed by the ferment of ideas, the prevailing temper to re-evaluate and to strike out in new directions, and the broadened concept of the Institute's responsibilities which is a direct growth of the whole cross-fertilization that has resulted from the Institute's war program.

fall term of 1947, to make a total 80 per cent greater than the largest prewar enrollment. The resultant load on staff and facilities has not been proportional to the increase in the number of students. It has been far greater since nearly every subject of study has had to be given every term, three terms a year. As a consequence the load on the staff has been excessive judged by any ideal long-range program. This becomes all the more apparent when it is remembered that, in addition to this large teaching commitment, the Institute's staff has the responsibility for directing a great research program, which in dollar expenditure will total more than \$10,000,000 in 1947-1948, nearly 20 times larger than any comparable program undertaken before World War II.

It is interesting to note that the number of people at M.I.T. during the 1946-1947 period totaled more than 8,000 or as many as during the peak of the war. Whereas during the war there were 2,000 students and 6,000 staff and nonstaff personnel, now there are more than 3,000 personnel and 5,660 students. Before the war approximately 1,500 people were employed, which is less than half of the present total.

Program for a New Era

The budget for 1947-1948 of nearly \$16,000,000 is more than four times the largest prewar budget. Of course the enlargement of our program and the overload which these statistics reflect have had a bearing on the Institute's reconversion. Under prevailing conditions there could be no return to prewar organization or leisure. Under the postwar conditions the Institute has come hard upon vitally important adjustments to insure its effectiveness as an educational institution.

Foremost among all our responsibilities is that of maintaining a strong educational program. In the wake of war's disruption, it has been necessary to retest programs, regain standards, and look ahead. Is our curriculum the best that we can devise to meet the conditions of the

postwar world? What are the optimum conditions for creative scholarship and research on the part of both students and staff? These basic questions are being examined by all the groups responsible for the management and conduct of the Institute, and significantly enough the current overload is not precluding this basic rethinking of our program.

The Faculty, for example, has appointed a Committee on Educational Survey to make a long-range study and re-evaluation of our curriculum and those policies which contribute to educational effectiveness. Under the chairmanship of Professor Warren K. Lewis, '05,* this committee has taken its assignment in great seriousness and has initiated a deeply probing study of those factors which contribute toward making an educational institution vigorous in scholarship and spirit. Not only is it reconsidering our undergraduate curriculum in the light of our prewar objectives but it is reaching out to determine what the objectives of the future should be in the training of scientists and engineers. Under the impetus provided by Dean Robert G. Caldwell's repointing of our humanities program, it is giving special attention to the problem of how best to relate the humanities to a professional curriculum and what kinds of training will best equip an engineer to handle the great social and public responsibility and power which must inevitably rest in his hands. And finally it is courageous enough to tackle some of the imponderables, mentioned above, which affect the "wanderings, alightings, fertilisings of man's thought." † What are those factors which we must emphasize at M.I.T. to provide the best possible environment for scholarly, creative work by our students as well as by our staff?

* Other members of the committee are: Professors John R. Loofbourou, Ronald H. Robnett, C. Richard Soderberg, '20, and Julius A. Stratton, '23.

† "The Commerce of Thought," a lecture by Sir Arthur Quiller-Couch.

Concurrently with the study by the Committee on Educational Survey, other approaches to the problem are being followed. Under the leadership of Dean John W. M. Bunker, the Committee on the Graduate School has underwritten the high standards of graduate study here while at the same time providing greater flexibility to the individual student in pursuing his professional objectives. New ways of organizing and co-ordinating research with teaching are being tested and policies are formulated for handling sponsored research to the advantage of the academic program. During World War II we observed the effectiveness of research teams, and we are now experimenting to determine how best to reap the advantages of group research in an academic organization. We are certain that research teams should never displace the brilliant individualist who avoids entangling alliances, but we want to find out how the two approaches supplement and assist each other.

One of the devices which we are using to handle group research — and to stimulate individual work — is what we call centers of research. These are interdepartmental organizations which co-ordinate the co-operative activities of various departments in important fields of overlapping interests. While we call them centers of research because research is their predominant role, they are nevertheless playing a very important part in our educational program, especially by providing superior opportunities for senior- and graduate-student thesis work.

As the postwar program develops, other educational trends are clearly observable. There has been a fresh and constructive concern with teaching methods, and several departments have instituted carefully designed programs for checking and improving the instructional techniques of young staff members. Reflecting the current interest of students in educational methods, one of the student honorary societies has undertaken careful evaluation of individual instructors in selected departments, all with the wholehearted interest of the departments.

In another direction, there is a trend, continuing from before the war, toward deepening engineering education through the adoption of more of the analytical tools of pure science, through more graduate training in engineering, and through the use of research to attract men of imaginative minds and to educate engineers who have the temerity and capacity to dream and speculate beyond the boundaries of the immediately practical. Similarly the science departments have deepened their programs, and the push (which began in earnest in 1930) to build a great School of Science, occupying a position of equal partnership with the School of Engineering, has brought science into full partnership.

Along with the deepening and broadening which come from a comprehensive understanding of physical laws, there is the broadening effect of humanistic study, which is receiving increased attention, as already noted in connection with the Committee on Educational Survey. Concurrently with the study by this committee, other approaches to the problem are being followed. The humanistic effects of extracurricular activities and the close integration of our humanities with supporting activities in the Technology community are being explored. In this direction, Everett Moore Baker, who was appointed dean of students on January 1, 1947, and Thomas P. Pitré, who became dean of freshmen at the same time, are exerting a powerful and liberalizing influence on the

student body, with a response from the students of instant and hearty appreciation. The registration officers in all of the several professional courses have stepped up their own effective contacts with students, and other personnel have thrown themselves into the over-all movement to bring students and staff into a community of scholars having the broadest possible outlook.

Contributing importantly and by design to this community building has been the new Director of the Medical Department, Dr. Dana L. Farnsworth, the Institute's first full-time medical director. Out of a background of both psychiatry and internal medicine, he has made the Medical Department an important and liberalizing factor in safeguarding the health and promoting the morale of students and staff. To serve the general welfare of the students in close relation to the Office of the Dean of Students and the Medical Department, a full-time director of athletics has been engaged and charged with the responsibility of making athletics serve education in the broadest sense.

Students at M.I.T. exhibit a similar interest in improving the environment and broadening the base of education at the Institute. With veterans returned from service comprising 60 per cent of the student body, we of course have an older and more mature group, but we also have a new interest in the values to be found in the field of the liberal arts. The present-day student usually has a well-thought-out program for his education and a willingness to work without stint to get ahead rapidly. Without any diminishment of his interest in professional subjects, he is willing to organize a liberal arts club; to organize a symphony orchestra; to sponsor (and to attend) lectures by prominent figures from nonprofessional fields; and to run carefully planned forums on such subjects as labor relations and universal military training.

Postwar Units and Personnel

Concomitantly with this broadening of interests of the staff and students has been a broadening of the Institute's planning for its future development. Instead of expecting that the major portion of the Institute will be east of Massachusetts Avenue, we now realize that the growth of M.I.T.'s educational facilities is certain to be so great that these facilities alone will require all of the land on the eastern half of the campus. The western tract of 50 acres is now conceived of as an area where we may develop really adequate student housing and recreational facilities and where a new type of campus development might be carried out which would have the dignity, beauty, and community living facilities that would contribute to the development of well-rounded men. In this area will be located the new Senior House, the Institute's first dormitory unit designed on the house plan and already under construction. Here, too, we hope to have other housing units, adequate playing fields, and a gymnasium so long needed and still unrealized.

The planning of facilities to promote a broadened education is epitomized in the concept for the Institute's Charles Hayden Memorial Library now being built.

The Charles Hayden Memorial Library is but one unit in the Institute's present program planned to implement the developments and new objectives. In addition to the library and west campus already mentioned, this program, ultimately involving a total expenditure of \$28,000,000, includes development of such new educational

facilities as a Metals Processing Laboratory,* a Hydrodynamics Laboratory and Naval Towing Tank, a Supersonic Wind Tunnel, now under construction, and a Gas Turbine Laboratory, already completed, and permanent buildings for the Research Laboratory of Electronics, the Laboratory for Nuclear Science and Engineering, and a Laboratory for Biology and Food Technology. In addition there are essential facilities for enriching student life, including the new gymnasium and the new Senior House, already mentioned, and, in behalf of the staff, a Faculty Club. The launching of this development program and the solicitation of funds to carry it through have been major undertakings of the redeployment period. Of the total of \$29,000,000, the equivalent of about \$9,000,000 has been secured, but the remaining \$20,000,000 must be raised. Actually the needs of M.I.T. are greatly in excess of this total, and the next five years must witness a sustained effort to enlarge capital resources of the Institute.

Is Our Staff the Best Possible?

This record would be incomplete without an estimate of the effects of World War II on the Institute staff and of the personnel changes made during the redeployment period. Before the war the Institute possessed a staff of magnificent capacity and scope. What is the situation today?

By any available test, the Institute has gained strength. Fortunately there were few losses; almost 100 per cent of the senior professors who were on leave are back. This was a major factor in the Institute's successful reconversion. While getting back its war service personnel, the Institute had an exceptional opportunity, as a result of its expanding program, to make a large number of major new appointments and to set high standards of selection in making these appointments. The war contacts of staff and administrative officers and the concentration in Cambridge of a great number of outstanding men during the war were major factors in assisting the Institute to spot men who met these high standards. In every major appointment we sought to answer affirmatively the ques-

* Announced in the April, 1948, Review.

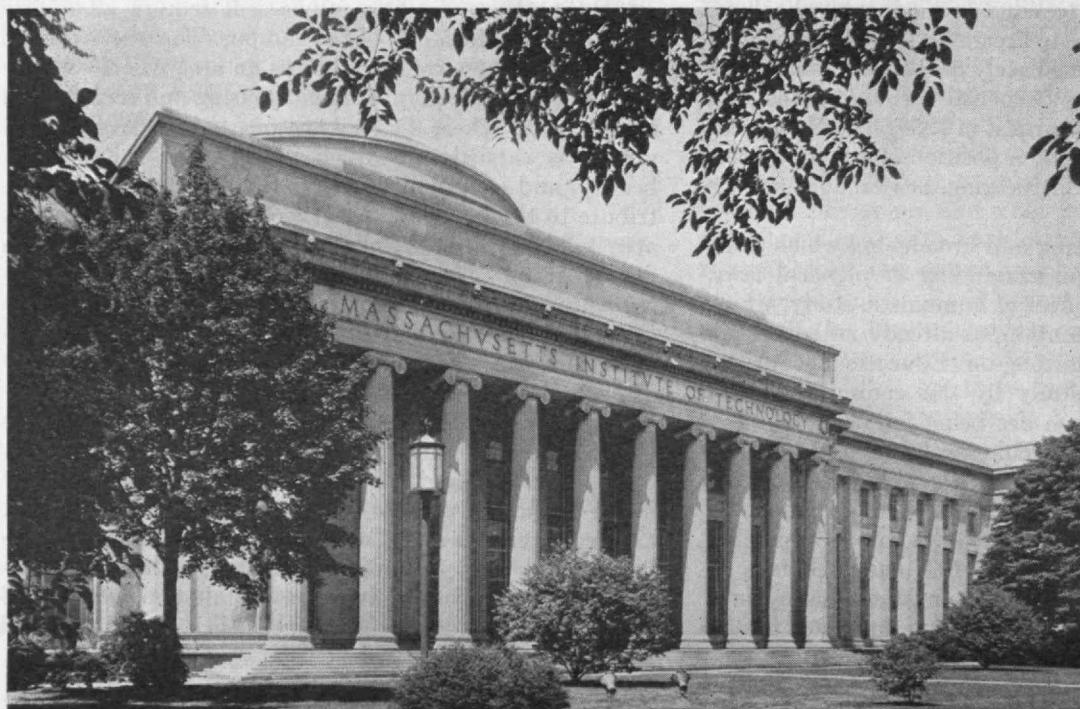
tion: Is the candidate the best available man in the country or even in the world to fill the post? Essentially the same question has also been asked in making promotions to the full professorship.

As a sampling, let me list some of the new appointments, omitting many outstanding younger members of the staff and limiting the list to those who now rank as full professors or who occupy positions of administrative responsibility.

Edward L. Moreland, '07, who withdrew from the deanship of engineering to become executive vice-president, part time, has been succeeded as dean of engineering by Professor Thomas K. Sherwood, '24, of the Department of Chemical Engineering. To the deanship of the School of Architecture and Planning has come William W. Wurster who had been in private practice in California. To the Office of Dean of Students has come Everett Moore Baker, a minister from Cleveland. A new post has been created, carrying the title of director of libraries, and this has been filled by John E. Burchard, '23, Director of the Bemis Foundation. To replace William N. Seaver, who retired for age, Vernon D. Tate of the National Archives has become librarian. Dr. Dana L. Farnsworth has become medical director.

Among recent appointments to department headships are Arthur C. Cope, who came from Columbia to head the Department of Chemistry; William T. Martin, who came from Syracuse University and is now head of the Department of Mathematics; Vice-admiral Edward L. Cochrane, '20, who comes from the Navy Department, where he has been chief of the Bureau of Ships and more recently chief of the Material Division, to head the Department of Naval Architecture and Marine Engineering; and William L. Campbell, '15, who came from industry to head the Department of Food Technology. From our own staff came C. Richard Soderberg, '20, to head the Department of Mechanical Engineering, John B. Wilbur, '26, to head the Department of Civil and Sanitary Engineering, and John Chipman to head the Department of Metallurgy.

Julius A. Stratton, '23, of the Department of Physics was appointed head of the Research Laboratory of Electronics, and Jerrold R. (Concluded on page 404)



Is our basic curriculum the best that we can devise to meet conditions of the postwar world? What are the optimum conditions for creative scholarship and research on the part of both students and staff? These basic questions are being examined by all groups responsible for the management and conduct of the Institute.

Some Angles on Trisection

Angle Trisectors Never Solve the Ancient Greek Problem of Dividing Any Given Angle into Three Equal Parts but Sometimes They Evolve New Approximations

By Willy Ley

ALTHOUGH no connection with sunspot or any other cycle has been established so far, a rash of angle trisectors arises every 15 years or so. Even though it may not be classed as a disease in the strict medical sense, such periodic outcropping of misguided energy takes on many of the characteristics of a recurring epidemic. We appear to be reaching the peak of one such epidemic at the present time and, in the interests of public health, it is instructive to examine and recognize the symptoms even though science knows of no sure and effective way of blighting the plague of angle trisection.

A patient's symptoms are easily detected. An angle trisector suffers under the hallucination that a given angle can be divided into three equal parts, using only a compass and straight edge. Furthermore, he has decided that he is the man to do it, although he knows that the problem is more than 2,000 years old. Presumably the hoary age of the problem is all the more reason to find a solution and be done with it forever.

When such a rash of trisectors does break out, there is usually also a mathematician around who tries to point out that angle trisection, in the sense in which the term was used by ancient Greek geometers, simply cannot be done. Usually, his attempts are not too successful because the repercussions evoked by the trisectors, while fortunately restricted to a comparatively small group, are loud enough to prevent him from getting more than about three words in edgewise. Here is the second easily recognized symptom.

The third symptom appears when the trisector submits a drawing something like that in Fig. 1 to a competent mathematician or preferably to a reporter, editor, or other individual in a position to bestow publicity. The drawing is accompanied by a letter, the text of which runs something like this: "Hah! So one can't divide an angle into three equal parts, eh? How's this for an angle? The angle has 90 degrees because it is a right angle. An equilateral triangle with one side coincident with one side of the right angle is constructed and it has three angles each of 60 degrees. Then I bisect one of these angles to divide the right angle into three equal angles of 30 degrees each. It took me only four hours to figure this one out — and the mathematicians themselves admit that they have tried to do that for the last 2,000 years!"

The mathematician who is expected to substantiate the discovery of the ages has little recourse but silence and decides that apparently he does not speak English well enough to be understood, even though he always thought he did. Wasn't the problem to trisect "any given angle"? Of course he knows that an angle of an integer number of degrees can be trisected provided that the number of degrees is divisible by nine. But he also

thought that everybody knew he knew it. The end of the battle is invariably a stalemate. Three dozen people still believe that they can trisect angles. Four thousand others agree with them. The mathematicians are able to offer proof of the impossibility of solving the Greeks' problem of angle trisection but they are seldom, if ever, able to convince the angle trisectors of the ills to which they are heir.

The misunderstandings always arise because the two combatants do not have the same thing in mind. When the mathematician says that angles cannot be trisected he means that there is no way of doing it with absolute mathematical correctness for any given angle, using only a compass and a straight edge — the latter of which is to be employed only for connecting two points, and not for measuring distances. The case of angles with an integral number of degrees divisible by nine (such as 9 degrees, 18 degrees, 27 degrees, and so on) is excluded from that statement, since the methods applicable for such angles do not apply for "any given angle."

What the mathematician does not mean is that any angle cannot be trisected with considerable accuracy for

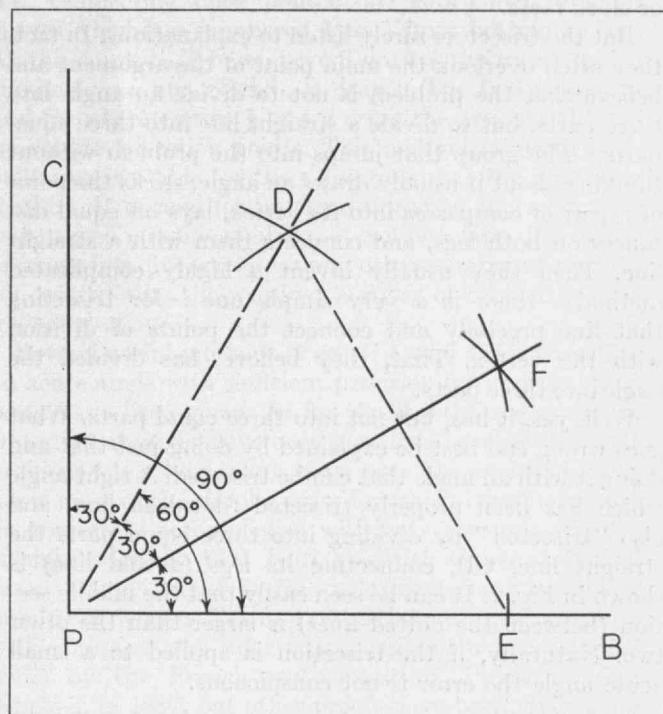


Fig. 1 — Any angle having an integral number of degrees which is divisible by nine can be accurately trisected. This diagram shows a simple method for trisecting a right angle by constructing an equilateral triangle with one side along the edge of the angle to be trisected, and then bisecting the resulting 60-degree angle at the apex.

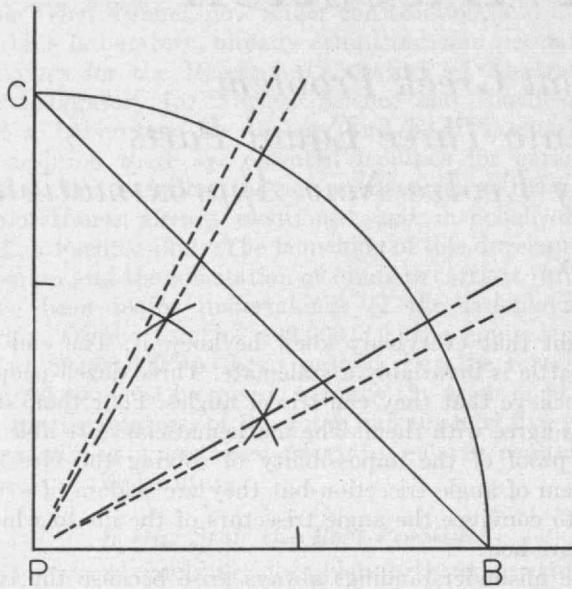


Fig. 2 — A common error into which "angle trisectors" fall is failure to distinguish between trisecting an angle and trisecting a straight line. The trisection of a straight line, connecting two points equidistant from the apex, divides the given angle into three parts (dotted lines) which are usually but poor approximations to the true angle trisection, as shown by the dot and dash lines in the diagram. The approximation becomes closer as the original angle becomes more acute.

all practical purposes. Of course that can be done; otherwise, there would be no dividing heads for milling machines, no cogwheels with an uneven number of teeth, no protractors or sextants, and not even instrument dials or clock faces.

But the trisectors rarely listen to explanations. In fact, they often overlook the main point of the argument and believe that the problem is not to divide an angle into three parts, but to divide a straight line into three equal parts.* The group that jumps into the problem without thinking about it usually draws an angle, sticks the point of a pair of compasses into its vertex, lays off equal distances on both legs, and connects them with a straight line. Then they usually invent a highly complicated method — there is a very simple one — for trisecting that line precisely and connect the points of division with the vertex. That, they believe, has divided the angle into three parts.

Well, yes, it has, but not into three equal parts. What goes wrong can best be explained by doing just that and doing it with an angle that can be trisected. A right angle which has been properly trisected (dot-dash line) and also "trisected" by dividing into three equal parts the straight line, CB, connecting its legs (dotted line) is shown in Fig. 2. It can be seen easily that the middle section (between the dotted lines) is larger than the other two. Naturally, if the trisection is applied to a small acute angle the error is not conspicuous.

* As is done here for a matter of convenience, angle trisectors often limit their attention to the trisection of acute angles for which reasonably accurate approximations can be made. The errors in practical methods of trisecting angles become more apparent as the angle is made greater than 90 degrees.

The next group begins by thinking about the problem. Their reasoning is this: if I have an angle, BPC (Fig. 3), and halve it in order to obtain its bisector, PQ, and then draw two lines parallel to that center line, DO and D₁O₁, these two lines must somewhere intersect the lines trisecting the angle. There is not the slightest doubt in anybody's mind that this reasoning is correct. At one point, the two lines will trisect the arc, and with it the angle, precisely.

The "fly in the ointment" is that this particular point cannot be determined except for some exceptional angles, such as those of an integer number of degrees if their integer can be divided by nine. But the trisection has a simple scheme in mind. He has two parallel lines, marked DO and D₁O₁ in Fig. 3. Now he draws one line, D₂R, parallel to the one leg of the angle, and then another one, D₃R, parallel to the other leg. Their distances from the legs of the angle are the same as the distance of the first pair of parallel lines from each other, that is, C₁D₂ = D₂D₃ = D₃B₁. From this construction it appears that lines from P through D₂ and D₃ would trisect the angle, CPB, neatly. The proof seems plausible until we remember that it was the arc, CB, which had to be trisected, whereas the construction has made the chords equal. For practical purposes, however, this method will do if angle, CPB, is sufficiently small. If, in addition, the drawing is done very carefully, it is possible to reduce the error to less than the thickness of the lines involved. Such approximation does not satisfy the mathematician, but it is acceptable to the engineer.

The last rash of trisecting mania seems to have occurred in Germany in about 1930 and while it did not add anything to the theoretical knowledge of the mathe-

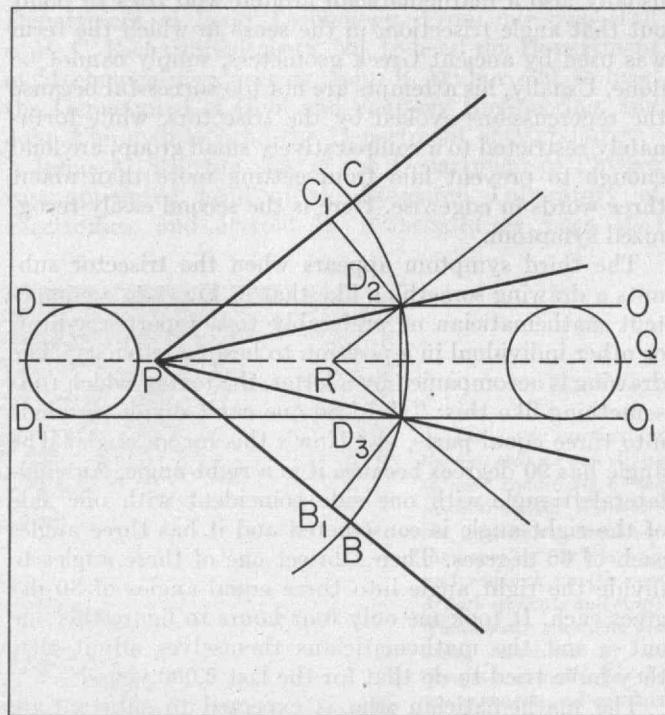


Fig. 3 — A recurring trick for "trisecting" angle BPC is to draw equidistant parallel lines to each leg of the angle to be trisected. Parallel lines of the same spacing are also drawn symmetrically about the bisecting angle. The intersection of the parallel construction lines determines the points, D₂ and D₃, which, if connected with the vertex, P, yield angles which trisect BPC. The resulting approximation is not very precise but is useful for trisecting small angles.

mathematicians, it did produce two very interesting methods of approximation which can be carried to any desired accuracy — except what is called mathematical accuracy.

One of these approximations is shown in Fig. 4 in which the angle, CPB , is to be trisected. In the construction the arc, $CDEB$, lays off equal distances on both legs, $PB = PC$, and a straight line connects points B and C . Then an arbitrary number of straight lines is drawn from the vertex, P , through arc, $CDEB$, dividing the angle, BPC , into several sections, not necessarily equal. Each of these radial lines will pass across the spherical segment between the straight line, BC , and the arc, $BEDC$.

The next step is to bisect each line in that spherical segment and to draw a smooth curve, $CFGB$, connecting the points of bisection. When that is done the distances, PC and PB , are halved, the points of bisection being marked B_1 and C_1 respectively on Fig. 4. Through B_1 and C_1 semicircles are drawn with radii, $PB_1 = B_1B = PC_1 = C_1C$. The points of angle trisection must be very close to F and G , where the semicircles cross the curve, $CFGB$. This method is quite accurate for small angles but is not acceptable to a mathematician as a "solution" because the curve, $CFGB$, is not "drawn in one sweep" but is established point for point. The construction makes possible a very close approximation but does not yield the required points of mathematical trisection.

Another very fine approximate method, which has the additional advantage that it can also be adapted to cut an angle into five or seven equal sections, was found some 20 years ago by a retired colonel and is shown in Fig. 5. First, a number of circles (or sections of circles) are drawn around the vertex of the angle to be trisected, BPC , in Fig. 5. Then an arbitrary distance, WX , is selected

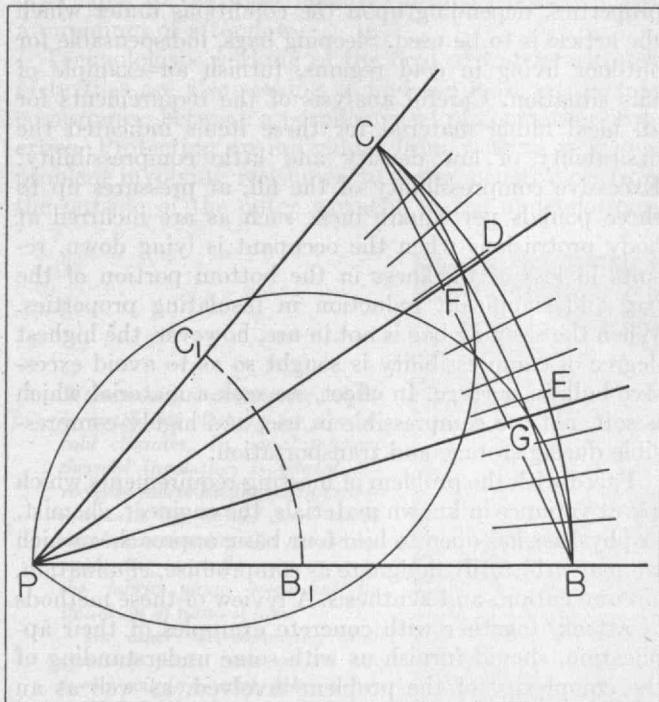


Fig. 4 — Another method of approximate angle trisection may be achieved by drawing arc $BEDC$ and connecting B and C with a straight line. Curve $CFGB$ is constructed midway between the straight line, BC , and the arc, $BEDC$. Points B_1 and C_1 , bisecting distances PB and PC , respectively, are located, and through them semicircles are drawn with radii equal to PB_1 . The points where the semicircles cut the curve, $CFGB$, locate points G and F , marking the approximate trisection of angle BPC .

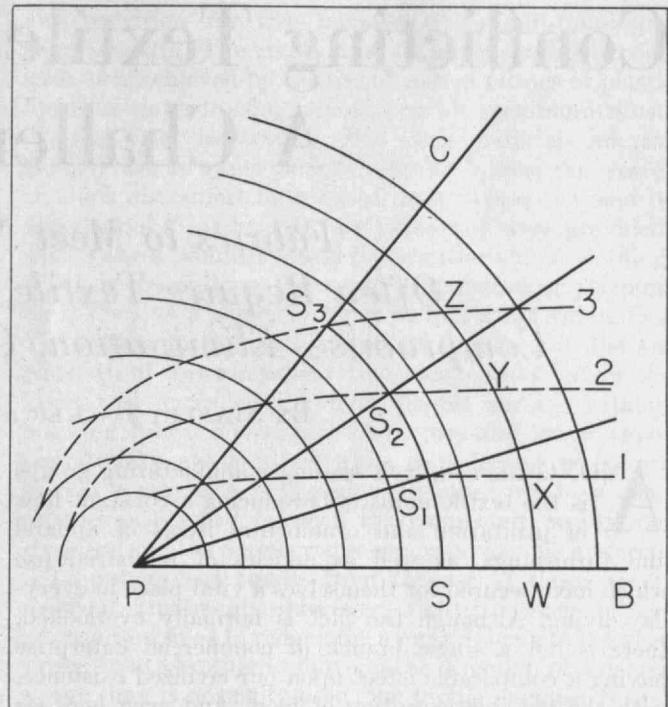


Fig. 5 — The numbered curves are constructed by laying off equal chords on circular arcs drawn about P , beginning at one leg of the angle to be divided. Where curve 3 cuts the other leg, an arc, SS_3 , is drawn. The intersection of this arc with curves 1 and 2 establish points S_1 and S_2 which, when connected to the vertex, provide approximate trisection of the given angle. The method can be extended to dividing the given angle into any integral number of approximately equal angles.

and laid off three times on the arcs of each of the circles, beginning at one leg of the angle. While that distance is arbitrary in itself, it is, of course, important that it is the same all through the operation, that is, $WX = XY = YZ$. Connecting these points, one gets three (dashed) curves which are numbered 1 to 3 from bottom to top. At the point, S_3 , where curve 3 crosses the upper leg on the angle, an arc, $SS_1S_2S_3$, is drawn. The two points, S_1 and S_2 , where curves 1 and 2 cross the arc, are the approximate trisection points. This method is mathematically unacceptable for the same reason as the preceding method. It is good for practical purposes, however, and, as has been mentioned above, it can be adapted to divide an angle into five, seven, or any other number of sections by constructing the required number of dashed lines as indicated above.

Several useful methods (Figs. 3, 4, and 5) for trisecting an acute angle with sufficient precision for practical purposes have been given. As for the strictly mathematical trisection, it might have been mentioned earlier that that problem was solved many years ago. The ancient Greeks knew most of the simpler cases for which trisection could be accurately accomplished with only a compass and a straight edge. In 1801 Karl Friedrich Gauss stated all cases of angle trisection for angles containing a rational number of degrees. The first proof that accurate trisection with compass and ruler is impossible, in general, was given by the French mathematician, Pierre Laurent Wantzel, in 1837, but other proofs have been given since then.[†]

[†] Klein, Felix, *Famous Problems of Elementary Geometry* (Boston: Ginn and Company, 1897); second edition with notes by R. C. Archibald (New York: Stechert-Hafner, Inc., 1930), \$1.50.

Conflicting Textile Requirements — A Challenge to the Scientist

*Fabrics to Meet New Requirements
Often Require Textile Designers to Engage in
Compromise, Elimination, Circumvention, and Synthesis*

BY STANLEY BACKER AND NORMAN E. ROBERTS

AMONG the country's leading manufacturing groups is the textile industry, producing a constant flow of utilitarian and ornamental items of apparel and furnishings, as well as articles of industrial use which have secured for themselves a vital place in everyday living. Although the fact is normally overlooked, there is not a single branch of commercial enterprise having a comparable effect upon our civilized existence, with the possible exception of food. And even here we must observe that we are constantly clothed, although our meals are served only thrice daily. In view of the paramount place of textiles in modern living, it would seem important that we understand some of the problems connected with the development of the clothes we wear, the linens in our homes, the curtains at our windows, the rugs beneath our feet.

These are hardly the products of modern invention. They have figured prominently in past civilizations and often serve as prime historical documents to those undertaking research into the realms of antiquity. The fabric properties to which we are accustomed are the result of centuries of experimentation and have been achieved only through constant modification in the manufacturing processes involved. The advances, however, have been made in the field of industrial technology. Until recently, little basic science has been utilized in the development of superior textile structures — the engineer, chemist, and physicist exhibiting almost complete indifference to problems of fabric improvement.

In World War I, America found herself isolated from European textile manufacturing facilities and cut off from the all-important sources of dyes on the Continent. Forced into a program of concentrated research, improvement, and revision of its techniques to provide the necessary independence, the United States soon exploded the myth of European superiority in these technological fields. During the period between World War I and II, American industry persisted in this spirit of scientific self-sufficiency until in 1941 it was well equipped to meet military requirements as they were then understood. This chronological aspect is stressed, for our knowledge has fallen behind the demands made on it in the solution of problems uncovered during World War II and in recent arctic maneuvers. Many serious weak points have become apparent in the textile materials designed for special uses.

The well-worn expression that we have "scraped the bottom of the barrel" of basic knowledge can be voiced with respect to our textile problems, for we have ex-

hausted the information which appears most applicable. However, concentration on fundamental studies to the exclusion of further applied research would not only be impracticable from an economic point of view, but would presuppose an unjustified confidence in our coverage of previous basic work and its interpretation. What has occurred, in fact, is an orientation of many minds engaged in textile research with respect to a number of well-defined problems. Such clarification of objectives has led to some basic questions which heretofore have not only been unanswered, but even have been unasked.

Conflicting requirements imposed on a fabric designed for a definite end use, which in their accomplishment tend to counteract each other, have formed the basis for many of these questions. A case in point is the waterproof-coated fabric used in Army raincoats during World War II at the expense of free evaporation of body perspiration. In some instances, we require a reversal of properties, depending upon the conditions under which the article is to be used. Sleeping bags, indispensable for outdoor living in cold regions, furnish an example of this situation. Careful analysis of the requirements for an ideal filling material for these items indicated the desirability of low density and little compressibility. Excessive compressibility of the fill, at pressures up to three pounds per square inch, such as are incurred at body protrusions when the occupant is lying down, results in loss of thickness in the bottom portion of the bag and significant reduction in insulating properties. When the sleeping bag is not in use, however, the highest degree of compressibility is sought so as to avoid excessive bulk in portage. In effect, we seek a material which is soft, not too compressible in use, and highly compressible during storage and transportation.

Faced with the problem of meeting requirements which are at variance in known materials, the engineer, chemist, or physicist has open to him four basic approaches which we may arbitrarily designate as compromise, elimination, circumvention, and synthesis. A review of these methods of attack, together with concrete examples of their application, should furnish us with some understanding of the complexity of the problem involved, as well as an appreciation of the balance of the research program undertaken by the armed forces.

Compromise, in this case, involves careful study of the factors responsible for the conflicting requirements and selection of a base material, construction, and finish which will assure optimum performance in each characteristic consistent with over-all efficiency. The minimum

functional limits of a single property serve as the base point above which compromise takes effect. One of the many examples of textile structures, in which opposing properties are desired, is fabric intended to provide fire resistance. Conditions imposed by modern warfare have made this a vital property for many items of clothing and equipage to be used in combat. It has been indicated by the action of several state legislatures that flame-resistant materials may also become important from a civilian standpoint, particularly with regard to children's clothing and decorative materials.

In reducing fabric flammability there are basically two phenomena which must be controlled — afterflame and afterglow. Continued afterflame will, of course, ultimately consume the fabric, while a long period of afterglow will destroy the material by charring. As a result of extensive research some relatively effective fire-resistant compounds for fabric application have been developed, but a fundamental study of the problem involved has revealed a definite conflict between the requirements for any such treatment. To retard afterflame, the finish should be of such a character that it will produce a predominance of carbon dioxide when the fabric is ignited. However, to reduce afterglow, formation of carbon monoxide is desired. Conversely, production of carbon monoxide contributes to afterflame, while formation of carbon dioxide encourages afterglow. Therefore, a treatment which effectively checks afterflame by the creation of carbon dioxide will, by its very nature, tend to propagate afterglow. The present direction of military research in the face of this situation is toward compromise; the development of improved fire-resistant treatments which will retard afterflame to the most effective degree consistent with a minimum of afterglow.

Technologists working in the field of water resistance of textiles are also seeking to find the most satisfactory compromise between a perplexing set of conflicting properties. Protecting an individual from wetness is a dual problem involving resistance to water penetration from the outside of the outer garment to the underclothing,

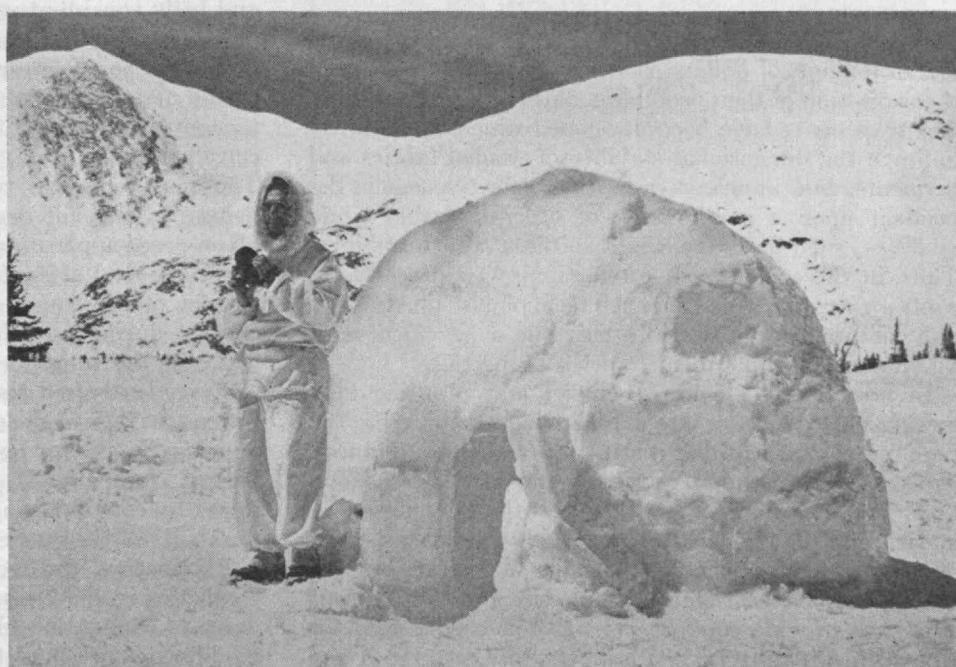
and provision for free passage of perspiration-vapor from the skin. The creation of an impenetrable barrier, such as is achieved by the use of coated fabrics or plastic films for waterproofing, would provide maximum resistance to rain penetration. But such materials are extremely low in vapor permeability and cause the wearer as much discomfort by trapped perspiration as would be experienced if inadequate rain protection were provided. This is also a problem in cold regions where underclothing, which becomes damp from rain penetration or perspiration, sustains a significant loss in insulating properties. The answer to this conflict to date has been in the application of water-repellent treatments which cover the fibers and yarns with a hydrophobic surface without blocking fabric interstices. Thus, air- and water-vapor permeability are retained while considerable resistance to rain penetration is provided. In other words, a compromise is reached between the completely waterproof structure and the porous water-vapor permeable material.

To obtain best results from the use of these water-repellent treatments, however, tightly woven fabrics are required so as to reduce the average pore size between yarns. In attempting to move in the direction of a denser weave than is normally used, the textile engineer is first confronted with economic factors and practical plant capacities which are serious deterrents to such a development. Even if these obstacles were to be overcome, the necessity for reaching another compromise would soon become evident in that the increased water resistance of the tighter construction would be largely vitiated by poorer drape characteristics and lowered tear resistance.

The features which distinguish a piece of woven fabric from any other sheet material are complete flexibility and drape, or capacity for assuming a three-dimensional shape without buckling. The freedom of interplay between fibers and yarn, and yarn and fabric, are such as to disguise or circumvent the inherent properties of the fiber. As an illustration, compare a fabric woven of ultra-fine glass fiber and a pane of glass. Although both are made of the same material, the former is a loosely woven, soft, flexible, tailor-able (having good drape), tear-resist-

Warmth with a minimum of weight is sought in clothing for use in cold climates. In usual fabrics, thermal insulation is related directly to fabric weight but improvements in the former were made without increasing the weight by producing a fluffy surface over the fabric plane somewhat in imitation of natural furs.

In other developments, fine synthetic fibers were quilted between wind-resistant fabrics for padded clothing having a desirably high ratio of warmth to weight.



Official Signal Corps Photo



Thin, light, porous fabrics provide the coolness of clothing which is required in the humid, tropical climates but unfortunately do not simultaneously provide the very much needed protection against insects. The density of fabric needed to provide protection against insects, in turn, increases weight and warmth.

To meet these two conflicting requirements, a compromise was made in the selection of tightly woven poplin for clothing.

Official Signal Corps Photo

ant, and permeable fabric; the latter, a rigid, inflexible, impermeable body with low tear or shear resistance. In achieving maximum packing of yarns in weaving, the material undergoes a gradual transition from textile-like to papery to film-like qualities.

In seeking a fabric for its field jacket in 1943, the Army made a sacrifice in tailorability, flexibility, and tear resistance in favor of improved water resistance when it selected an oxford weave styled after the English cloths developed at the Shirley Institute. It was not willing to make such a compromise, however, in its choice of an outer fabric for the trench coat in which drape and appearance were important factors. In this instance, the oxford weave was rejected in favor of a sateen material. Inasmuch as civilian demands, with respect to tailorability, far exceed those of the armed forces, there is little likelihood that water resistance achieved at the expense of appearance and comfort would find commercial acceptance.

Shrinkage in laundering has been responsible for the loss of millions of dollars' worth of garments long before the expiration of their useful life. Shrink-resistant finishes and treatments have been developed which significantly improve the dimensional stability of woolen fabrics and garments, but in many cases their effectiveness is dependent upon a modification of other desirable fabric qualities, such as drape, hand softness, and durability. Thus, in the continued quest for improved processes to control excessive shrinkage, the technologist must arrive at a compromise which will satisfy one requirement with a minimum of impairment to other properties.

In hot, humid climates, comfort and resulting high morale of the soldier are largely dependent upon the coolness of the clothing worn. This calls for thinness, lightness, and high porosity in fabric construction. However, tropical insects (particularly the Anopheles or malaria-breeding mosquito) find such thin, porous materials an easily penetrable barrier for their probing proboscises. Hence, against the desire for thin, porous fabrics to provide comfort, we must place the need for a dense insect-resistant material. In this case the Army

has sought to compromise the two requirements by adopting for tropical uniforms a lightweight but tightly woven five-ounce poplin, such as that chosen by Admiral Byrd for its lightness and wind resistance.

Another example of conflict between properties leading to good appearance and other characteristics is afforded by dress fabrics for tropical- or summer-temperature climate wear. Since insect resistance is not a consideration for such materials, they are chosen primarily for their appearance and comfort. Thin, light, and open constructions, such as the tropical worsteds, are the obvious answer to this need. However, the requirement for opacity must also be considered, for the fabric must be of sufficient body to conceal the color and shape of undergarments. Since such opacity is attained only through closeness and density of weave, another conflict among properties is created. Experiments are being conducted at present to establish the limits of opacity and body consistent with thinness and permeability.

Attack of cellulosic structures in the tropics by micro-organisms posed an urgent problem to the producers of textile materials for the armed forces. Fungicidal agents to control or prevent mildew growth were first to be considered but, here again, conflict was encountered. The most effective treatments were toxic to human beings in varying degrees. Thus, careful screening of all proposed applications was necessary to prevent serious dermatological aftereffects upon personnel handling the textiles in subsequent fabrication processes and also in contact during use. Furthermore, some degree of solubility of the fungicide had to be retained in order to achieve the desired resistance. This, in turn, resulted in progressive loss of the agent in laundering of the garment or in leaching as a result of rainfall. During the major part of World War II, damage to textile stores was minimized by compromising between toxicity, solubility, and durability of the fungicides accepted by the armed forces.

Elimination, the second approach to the problem of conflicting requirements, consists of analysis of the desired incompatible characteristics with a view to their modification or complete elimina- (Continued on page 406)

THE INSTITUTE GAZETTE

PREPARED IN COLLABORATION WITH THE TECHNOLOGY NEWS SERVICE

Trek to Tech

JUNE 12 will be Alumni Day, 1948, when M.I.T. graduates from all corners of the country will return to the Institute to renew acquaintances, to attend a symposium on "Logistics of Peace," and to partake of the ever welcome Stein Banquet at Boston's Hotel Statler in the evening.

William W. Garth, Jr., '36, chairman of Alumni Day, reports satisfactory progress in completing plans for this event. To assist Mr. Garth in the manifold details to which attention must be given to assure a smoothly functioning affair, the following committees have been appointed:

Banquet: Edmund B. Fritz, '32, chairman, William H. Carlisle, Jr., '28, Allen Latham, Jr., '30, James B. Smith, '32, Robert L. Johnson, '38, and Lewis T. Jester, Jr., '41; *Class Day:* John A. Hrones, '34, chairman, Eugene Mirabelli, '19, and Kenneth R. Wadleigh, '43; *Exhibits:* Herbert L. Beckwith, '26, chairman, John E. Burchard, '23, Richard M. Bissell, Jr., Staff, Robert J. Hansen, Staff, Gyorgy Kepes, Staff, Norman J. Padelford, Staff, Walter S. Pierce, Staff, and Robert R. Shrock, Staff; *Ladies' Program:* Mrs. B. Alden Thresher, chairman, Mrs. Raymond H. Blanchard, Mrs. Horatio L. Bond, Mrs. Karl T. Compton, Mrs. Marshall B. Dalton, Mrs. Lester D. Gardner, Mrs. William W. Garth, Jr., Mrs. James R. Killian, Jr., and Mrs. George W. Treat; *Luncheon:* John B. Wilbur, '26, chairman, Flint Taylor, '26, William J. Kirk, '28, and Ariel A. Thomas, '36; *Publicity:* Ralph T. Jope, '28, chairman, Henry B. Kane, '24, James Donovan, '28, Beverly Dudley, '35, and John J. Rowlands, Staff; *Registration:* Wolcott A. Hokanson, Staff, chairman, John N. Higgins, '31, and Donald P. Severance, '38; *Symposium Arrangements:* Donald Whiston, '32, chairman, G. Edward Nealand, '32, and William H. Radford, '32; *Transportation:* Malcolm S. Stevens, '34, chairman, Emmons J. Whitcomb, '11, and John C. Leslie, '28; *Ways and Means:* Delbert L. Rhind, Staff, chairman, Carl M. F. Peterson, '29, and Horace S. Ford, Staff; *Stein Design:* Henry B. Kane, '24.

The day's events will begin with registration of Alumni in the main building of the Institute. The morning will be available for visiting the several exhibits which are being planned for Alumni Day: some of the more popular laboratories will also be open for inspection.

At noon, Alumni will have opportunity to renew old acquaintances at the luncheon in the Great Court.

Outstanding speakers will discuss the economic, political, and military factors underlying international peace in an afternoon symposium, "Logistics of Peace," to be held in Walker Memorial.

Boston's Hotel Statler will be the scene of the ever popular "Stein-on-the-Table" Banquet, with a newly designed 1948 stein for all who attend. Persons prominent in the State Department will give the banquet addresses, and President Compton will deliver his annual report.

Open House

INTERRUPTED during the war years, the traditional spring Open House will be resumed this year when the Institute will open its doors and become host to thousands of visitors on Saturday, May 1. Exhibits, lectures, demonstrations, and guided tours are being planned to show the latest developments in science and engineering as well as student life at M.I.T.

Students will serve as hosts and, with the assistance of Faculty advisers, will conduct and plan many of the exhibits. Those technical features which, in past years, have drawn as many as 35,000 visitors to M.I.T. grounds in a single day will, of course, be a feature of Open House.

The classroom and laboratory, however, represent but one side of life at the Institute, and guests will have an opportunity as well to witness many of the extra-curricular activities in which M.I.T. students engage.

Class Reunions

The secretaries of the following classes have announced reunions and get-togethers to be held as noted below:

- 1888 In celebration of their 60th anniversary. Tentative date is the week end of Alumni Day, June 12. Details will be announced later.
- 1893 June 11, The Country Club, Brookline, Mass.
- 1898 June 9-12, Headquarters at the Parker House, Boston. June 9, Babson Institute; June 10, The Country Club in Brookline; June 11, Commencement at M.I.T.; June 12, Alumni Day at M.I.T.
- 1903 June 11. The Class Secretary, Frederic A. Eustis, and Mrs. Eustis, invite classmates, their wives, and daughters to a 45th anniversary party at their home, 1452 Canton Avenue, Milton 86, Mass. Time: 5:00-9:00 P.M.
- 1905 June 18-20, East Bay Lodge, Osterville, Mass.
- 1908 June 9-11, Oyster Harbors Club, Osterville, Mass.
- 1913 June 11-13, New Ocean House, Swampscott, Mass.
- 1918 June 11-13, Cliff House, Scituate, Mass.
- 1921 June 12, Hotel Statler, Boston. A get-together at 4:00 P.M.
- 1923 June 13-16, The Griswold Hotel and Country Club, New London, Conn.
- 1928 June 25-27, Wianno Club, Wianno (Osterville), Mass.
- 1933 June 10 to morning of June 12, East Bay Lodge, Osterville, Mass.
- 1938 June 10-12, Mayflower Hotel, Plymouth, Mass.
- 1943 June 11. Dinner in the Campus Room, Graduate House, M.I.T., at 7:30 P.M. Assembly at 6:30 P.M.

Please consult individual class secretaries for additional information.



The Educational Elite

CONGRATULATIONS are in order for 10 Faculty members recently promoted to full professorship, to 12 advanced to associate professor, and to 10 recently made assistant professor. In addition, 13 members of the staff were made instructors, according to President Compton.

Members of the Faculty promoted to the rank of professor are:

Shatswell Ober, '16.....	Department of Aeronautical Engineering
Ernst A. Hauser.....	Department of Chemical Engineering
Arthur T. Ippen.....	Department of Civil and Sanitary Engineering
Richard M. Bissell, Jr.....	Department of Economics and Social Science
Douglas M. McGregor.....	Department of Economics and Social Science
Harold E. Edgerton, '27.....	Department of Electrical Engineering
William C. Greene.....	Department of English and History
Witold Hurewicz.....	Department of Mathematics
William R. Hawthorne, '39.....	Department of Mechanical Engineering
John A. Hrones, '34.....	Department of Mechanical Engineering

Members of the Faculty who were promoted to the rank of associate professor are:

Raymond L. Bisplinghoff.....	Department of Aeronautical Engineering
William R. Weems, '35.....	Department of Aeronautical Engineering
Lawrence B. Arguimbau.....	Department of Electrical Engineering
Yuk Wing Lee, '27.....	Department of Electrical Engineering
Henry J. Zimmermann, '42.....	Department of Electrical Engineering
George de Santillana.....	Department of English and History
Douglas P. Adams.....	Section of Graphics
John T. Burwell, Jr., '34.....	Department of Mechanical Engineering
Michael B. Bever, '42.....	Department of Metallurgy
Nicholas J. Grant.....	Department of Metallurgy
Delbar P. Keily, '34.....	Department of Meteorology
Laszlo Tisza.....	Department of Physics

Newly appointed assistant professors are:

Howard Simpson.....	Department of Building Engineering and Construction
Carroll J. Brown, 9-46	Department of Business and Engineering Administration
Charles G. Swain.....	Department of Chemistry
Benjamin J. Dasher.....	Department of Electrical Engineering
Robert H. Eustis.....	Department of Mechanical Engineering
Herman Klugman.....	Department of Modern Languages

Professorship promotions recently announced include (top to bottom and left to right): Richard M. Bissell, Jr., Professor of Economics; Harold E. Edgerton, '27, Professor of Electrical Measurements; William C. Greene, Professor of English; Ernst A. Hauser, Professor of Chemical Engineering; and William R. Hawthorne, '39, Professor of Mechanical Engineering.



David H. Frisch	Department of Physics
Matthew L. Sands	Department of Physics
Malcolm W. P. Strandberg	Department of Physics
Robert W. Williams, '48	Department of Physics

Members of the staff who were promoted to the rank of instructor are:

Elmer E. Larrabee	Department of Aeronautical Engineering
Henry M. Paynter, Jr., 10-44	Department of Civil and Sanitary Engineering
Henry C. Bourne, Jr., '47	Department of Electrical Engineering
Wilbur R. DeHart, 6-46	Department of Electrical Engineering
James H. Henry	Department of Electrical Engineering
Leon G. Kraft, Jr.	Department of Electrical Engineering
Robert B. Wilcox	Department of Electrical Engineering
Robert B. Davis, 9-46	Department of Mathematics
Raymond M. Redheffer, '43	Department of Mathematics
Oliver G. Selfridge, 6-45	Department of Mathematics
Robert B. Jacobs, 2-46	Department of Mechanical Engineering
Ethan A. Murphy	Department of Meteorology
Lester A. Siegal, 10-44	Department of Physics

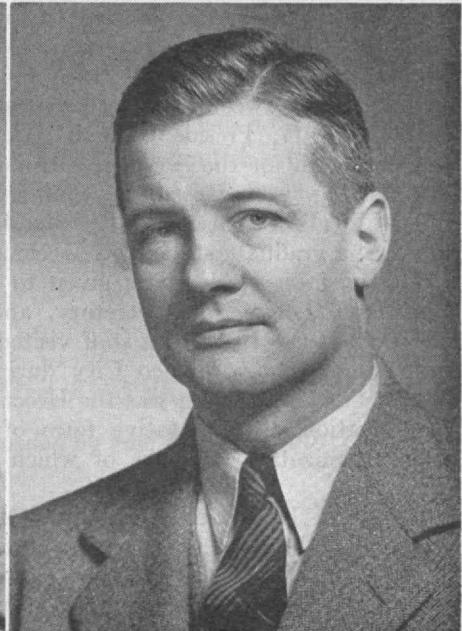
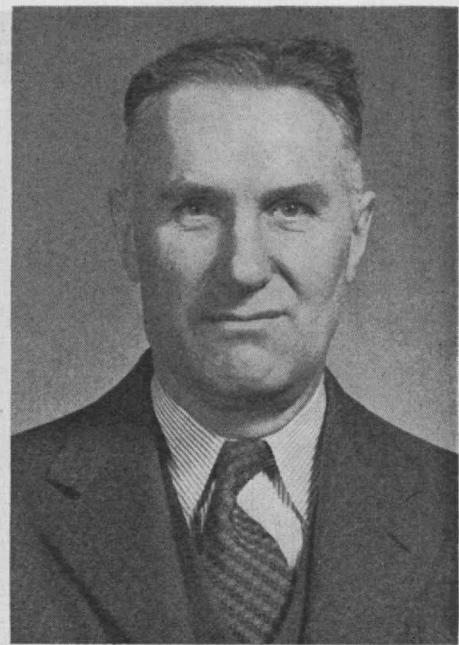
Westinghouse Professorship

WILLIAM R. HAWTHORNE, '39, Professor of Mechanical Engineering at M.I.T., has been appointed to the new Faculty post of George Westinghouse Professor of Mechanical Engineering. Dr. Hawthorne, who was recently awarded the Medal of Freedom with bronze palm by the War Department, is internationally known for his work in the field of jet propulsion, gas turbines, and combustion.

The establishment of the George Westinghouse Professorship at M.I.T. was announced last fall when the new Gas Turbine Laboratory was dedicated. This new post was made possible by a grant from the Westinghouse Educational Foundation. It provides for study and research in the constantly expanding field that has grown up about the development of gas turbines and related fields of mechanical engineering.

Born in Benton, England, in 1913, Dr. Hawthorne attended Trinity College, Cambridge University, where in 1934 he received the degree of bachelor of arts. He then came to M.I.T. as a Commonwealth Fund Fellow and completed work for his doctor of science degree in fuel engineering in 1939. He joined the staff of the institute as associate professor of mechanical engineering in 1946.

Full professorship has recently been announced for (left to right and bottom to top): John A. Hrones, '34, Professor of Mechanical Engineering; Witold Hurewicz, Professor of Mathematics; Arthur T. Ippen, Professor of Hydraulics; Douglas M. McGregor, Professor of Psychology; and Shatswell Ober, '16, Professor of Aeronautical Engineering.





The new building will occupy a site between the main educational buildings of the Institute and Walker Memorial, and will face the Charles River Basin. In addition to its basic purpose as a center of management and reference for one of the country's largest engineering collections, the library will provide facilities for four divisional libraries in the humanities. It will also serve as a center of research on scientific aids to learning, including the laboratories supported by a \$100,000 grant recently made by the Carnegie Corporation. Present plans indicate that the building will be ready for occupancy in the autumn of 1949.

The design of the Hayden Memorial Library had the advantage of penetrating study by the Co-operative Committee on Library Building Plans, which is made up of representatives of such institutions as Harvard, Princeton, Pennsylvania, California, Duke, North Carolina, Iowa, Wisconsin, Michigan, Rice Institute, and M.I.T., over a period of more than two years during which the plans were perfected. The work of this committee, which was supported by a grant from the Rockefeller Foundation for the purpose of such a study, has materially influenced the scope and design of the new building which is expected to set a new standard in university library facilities.

Real and Imaginary

MEETING in the Campus Room of the Graduate House on the last Monday in March, for its 261st session, were 112 members of the Alumni Council who broke bread, and in the business portion of the meeting, took action on reports, listened to President Compton liken the Institute to a complex quantity, and heard C. Richard Soderberg, '20, trace the history of heat engines from Newcomen to jet propulsion. Raymond H. Blanchard, '17, President of the Alumni Association, was chairman for the evening. Introduced, as guests of the meeting, were Roscoe H. Smith, '23, President of the M.I.T. Association of Cleveland, and Daniel F. Flowers, a graduate student in Mechanical Engineering.

The business session was given to reports in which Charles E. Locke, '96, Secretary, announced that 11 members of the Institute's staff visited 19 alumni clubs from Montreal to Mexico City during February and March. Also announced was the Executive Committee's authorization of a tentative form of constitution for class organization, the use of which is optional with each class.

Henry B. Kane, '24, Director of the Alumni Fund, announced that the eighth year of the Alumni Fund closed with a total of \$206,366 contributed by 9,771 Alumni. Although the amount contributed was \$21,000

in excess of last year's record, the number of contributors dropped about two per cent.

In recounting recent work of the Administration, President Compton compared the Institute's operations to a complex quantity — the real part of which is represented by present educational activities and building programs, whereas the less tangible factors of future planning and the budget take on the characteristics of the imaginary component. Dealing first with the real quantities, President Compton reported that the new field house was being rapidly completed on Vassar Street, adjacent to the Massachusetts State Armory, as was also the supersonic wind tunnel, near the Cottage Farm Bridge. The new Senior House on Memorial Drive is expected to be ready for occupancy in the fall. Reported as a future activity, which has since become history, is the breaking of ground for the Charles Hayden Memorial Library, illustrated above.

Not so familiar but nevertheless just as "real" are the imaginary quantities relating to the Institute's operations. These include such topics as increasing costs of operations, budgetary matters, and the future stabilized enrollment. These topics are "imaginary" only in the sense that they represent plans and expectations rather than accomplished facts. It is estimated that student enrollment will drop to about 4,900 next fall and that by next year it will be possible (Continued on page 386)

Construction of the Charles Hayden Memorial Library, which will serve not only as a great repository of scientific and engineering knowledge, but as a center of the humanities and social science program at M.I.T., was begun on April 5. The event was marked by a groundbreaking ceremony in which President Compton, Ralph T. Walker, '11, representing the architects, Voorhees, Walker, Foley, and Smith of New York, and J. Willard Hayden, President, and the trustee of the Charles Hayden Foundation, (left to right) played an active role. Representatives of the Thompson-Starrett Company, who will construct the library; James R. Killian, Jr., '26, Vice-president of the Institute; John E. Burchard, '23, Director of Libraries; Vernon D. Tate, Librarian; and members of the administrative offices and library staff were present at the ceremony. A model of the new library was first shown publicly at this time.

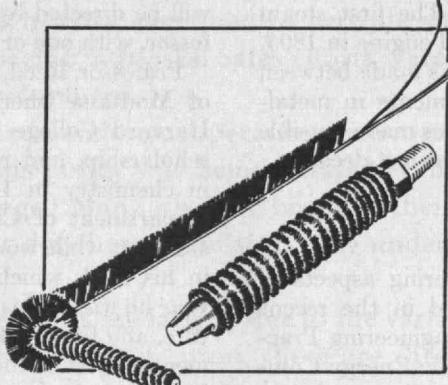
The library will be a memorial to the late Charles Hayden, a member of the Class of 1890, whose lifelong interest in M.I.T. will thus be perpetuated. Construction of the library is made possible by a gift of \$2,200,000 which came to the Institute through the generosity of J. Willard Hayden who broke ground for the new structure.

BUSINESS IN MOTION

To our Colleagues in American Business ...

Probably few people realize that the dairy industry is a large user of special brushes. In pasteurizing and bottling plants milk flows through pipes and tubes, and these must be thoroughly scrubbed inside, using small cylindrical brushes attached to rods. Naturally, the brushes themselves must be capable of sterilization, which means a metal back. Conventional tufted brushes do a good job, but a famous manufacturer realized that a better job would result if it could make a brush by holding the bristles in a channel, and then winding the straight brush into a small, tight spiral. Experiments immediately showed, however, that there was a lower limit to the radius obtainable without cracking the metal and loosening the bristles. That limit, unfortunately, was considerably above the radius necessary to make a brush that would have an outside diameter, over the bristles, of $\frac{3}{4}$ " and an inside diameter, over the mandrel, of $\frac{3}{16}$ ".

It was at this point that Revere was called in. Did we know of any metal or alloy which would withstand such a double deformation? Remember, Revere was told, the metal first must be turned up into a channel, enclosing a brass wire around which the bristles are set. Then the channel must be bent on its back in a tight coil with that small inside diameter of $\frac{3}{16}$ ". Was there anything that would take this abuse and not crack, split, break, or open the bristle-filled channel?



Anybody could see that this was a tough problem. If annealing could have been resorted to, perhaps the operation would not have been considered too difficult, but you can't anneal bristles. The metal had to be taken as it came from the mill, made to do that double flip-flop, and make a perfect brush.

If you had been the brush manufacturer, we trust you would have done what he did—come to Revere for help.

If you had been Revere, you would have done just what we did—study the characteristics of all the Revere Metals and Alloys, seeking one that would have the required strength and toughness, plus maximum corrosion-resistance.

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This is but one example that shows how a supplier can collaborate with his customers to mutual benefit. Revere is not alone in carrying on such activities. Every supplier, no matter whether he produces metals or woods, chemicals or plastics, rubber or glass, inevitably knows a great deal indeed about his materials and how to work them into finished products. The great essential is that he be fully informed as to methods and end uses, for only then can he turn his knowledge and experience to your benefit.

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THE INSTITUTE GAZETTE

(Continued from page 384)

to effect a still further reduction to 4,500, the present postwar goal. A deficit which may be as much as \$60,000 is expected from operations of the current year, but this will be met by drawing on the accumulated income from special funds which were little used during World War II. The real crisis in budgetary operations is expected to come in two or three years, but plans to meet the anticipated deficits are now being laid.

Following President Compton was Professor C. Richard Soderberg, Head of the Department of Mechanical Engineering, who traced the history and development of heat-power engines from the early Newcomen engine and Watt condenser to the modern gas turbine. Significant developments in this field were found to be correlated with progress in economic and political history, and, in turn, steam and other heat engines greatly increased the market for power, expanded industrial production in factories, and accelerated the industrial revolution. The statement of the principle of the conservation of energy in 1842 opened the way for Carnot to deduce the theoretical limit of efficiency of heat engines which, in turn, made possible appreciable improvements in the potentialities of the steam engine. The first steam turbine appeared in 1875, the first Diesel engine in 1895, and much progress in airplane engines was made between the two World Wars. By 1940 developments in metallurgy, mechanical engineering, and physics made possible the development of gas turbines during the last decade.

Atomic Energy Engineering

GRADUATE training in the engineering aspects of atomic energy took a step forward in the recent establishment of an M.I.T. School of Engineering Practice in the production plants of the Atomic Energy Commission at Oak Ridge, Tenn. Thomas K. Sherwood, '24, Dean of Engineering at M.I.T., stated that the purpose of the school is the education of graduate students in several fields of engineering under a program which is designed to develop their ability to apply basic principles to the solution of technical problems encountered in industry, with emphasis on the engineering aspects of atomic energy.

It is not anticipated that nuclear engineering will become a separate branch in the same sense as civil, mechanical, electrical, or chemical engineering. The plants of the Atomic Energy Commission constitute a very large industry, requiring engineers with basic training in the established engineering fields. The Engineering Practice School is designed to provide these men with a varied plant experience which would better prepare them for responsible engineering positions in the general field of atomic energy. The program is in accord with the announced policy of the Atomic Energy Commission to encourage education and the enlargement of both theoretical and practical knowledge relating to atomic energy.

Plans for the school were completed recently with officials of the Atomic Energy Commission and the Carbide and Carbon Chemicals Corporation which operates the Oak Ridge plant. The arrangements for the Graduate

Engineering Practice School were made with the concurrence of the Oak Ridge Institute of Nuclear Studies which has a broad graduate training program at Oak Ridge in co-operation with its 14 member universities in the South and Southwest.

Admission to the new school is restricted to graduate students in the several engineering departments of the Institute who have been in residence at M.I.T. at least one term. The program is open only to United States citizens and every student must be cleared by the Atomic Energy Commission before he will be considered for admission to the School.

Students are expected to live as a group in a dormitory at Oak Ridge, and the period of residence for the term of the school will be approximately five months. The first group will begin their studies in July and the second will enter next February. Academic credit will be given for work at the Oak Ridge station. Since the time spent at the school will be devoted entirely to education, students will receive no compensation. They are expected to be assigned by the director to a considerable number of atomic energy plant problems during the period of the five months' course.

Professor Walter G. Whitman, '17, Head of the Institute's Department of Chemical Engineering, will be in charge of the new School of Engineering Practice, and the educational program at the Oak Ridge station of M.I.T. will be directed by William A. Reed, '43, Assistant Professor, with one or more assistant directors.

Professor Reed, the school's first director, is a native of Montana where he was born in 1920. He attended Harvard College from 1938 to 1942 under a national scholarship, and received his bachelor of science degree in chemistry in 1942. He then joined the staff of the Department of Chemical Engineering at M.I.T. as an assistant while working for the degree of master of science in his field, which was awarded in 1943. For the next year he was an instructor in his Department at the Institute, and from 1944 to 1946 he was working on a government project in the Department of Mechanical Engineering. In 1946 he was appointed research associate and carried on advanced work which led to the degree of doctor of science in Chemical Engineering in 1948. His appointment as assistant professor was made on February first this year.

Endorsement

AERONAUTICAL engineering, as taught at M.I.T., was carefully examined by six members of the Visiting Committee on the Department of Aeronautical Engineering who met at the Institute on May 23, 1947.*

The morning was spent in an inspection of the facilities now available to the Department for instruction and research. The Committee was pleased to note that the Department now occupies the entire Guggenheim Building and is using the excellently skylighted upper floor, vacated by the Department of Meteorology, for a design room. Examples of students' general design layouts and detail design of components were displayed by Professor Otto C. Koppen, '24, (Continued on page 388)

*Members of this Committee for 1946-1947 were: Gordon S. Rentschler (deceased) chairman, Godfrey L. Cabot, '81, Frank W. Caldwell, '12, B. Edwin Hutchinson, '09, Theodore P. Wright, '18, Ralph S. Damon, and Lawrence B. Richardson.

A Progress Report on Phase Microscopy

EVER since American Optical Company developed the first phase microscope to be shown in this country, scientists have awaited the day when it would be readily available.

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However, much work remained to provide suitable phase objectives for many specific purposes. Sales efforts were postponed in favor of continued development.

After years of research in cooperation with many leading scientists, the wisdom of this policy was demonstrated at the 1947 AAAS Convention in Chicago. Many visitors brought their own materials in which significant detail could be seen only under the Spencer Phase Microscope.

The superior results are largely due to the variety of Spencer phase objectives. For each magnification, there are three different types of objectives—Dark Contrast, Bright Contrast and B Minus Contrast, each in three degrees of contrast. More than 20 in all, they enable the user to select the best equipment for his needs . . . and provide flexibility far greater than equipment giving only one type of contrast.

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THE INSTITUTE GAZETTE

(Continued from page 386)

and Frank K. Bentley, Assistant Professor of Aeronautical Engineering.

The aeronautical branch library was visited in its new location, which provides more space for reading tables, and the following laboratories were inspected: Instrumentation, Structures, Helicopter, Students' Wind Tunnel, Flutter Wind Tunnel, Wright Brothers Wind Tunnel, Gas Turbine, and Automotive. In each laboratory, typical experimental work was shown and the opportunity was taken to discuss, with the staff members in charge, the purpose and function of the laboratory in the Institute's educational program.

In the afternoon the Committee inspected the major research projects being carried on for the Army and Navy by groups under the direction of Professors Charles S. Draper, '26, and John R. Markham, '18.

A conference with administrative officers of the Institute and a few faculty members of the Department was held in the evening. Careful consideration was given to trends in the aeronautical industry involving new fields of aeronautical science. The balance between teaching and research is affected by the needs of the government for research bearing on national security, and this topic also received attention.

Research projects for the Army and Navy are in good balance with the educational program and are affording

excellent opportunities for graduate students to undertake advanced work in the newer aspects of aeronautical science. Furthermore, postwar government-sponsored research encourages the search for new knowledge, which strengthens the Faculty and stimulates teaching. Continuation of government research projects as now controlled and on the existing balance of effort between the several types of activity of the Department is heartily recommended.

It was found that previous recommendations had been well implemented and the Committee was especially gratified to note the expanded space and facilities which are now available. In particular the extension of the graduate teaching program in supersonic aerodynamics, aeroelasticity and flutter, helicopters, gas turbines, and jet propulsion, and the addition of the staff of experts in these fields are most welcome.

The Committee was gratified to note the rapid progress which had been made toward completion of the Gas Turbine Laboratory and the enlargement of the Sloan Automotive and Aircraft Engine Laboratory. The latter should be able to handle double the former number of enrolled students.

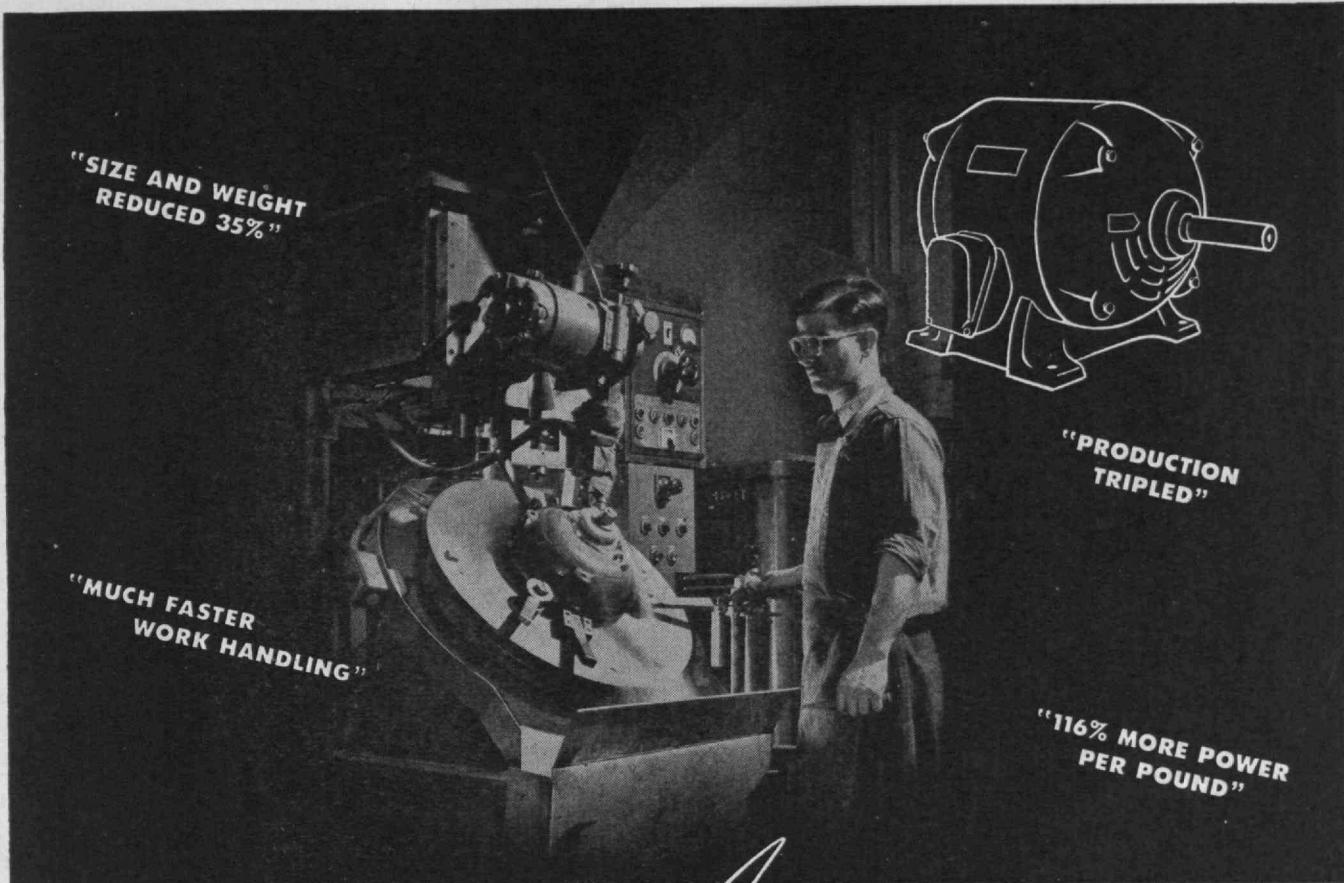
If the interest shown by attendance at the courses justifies the expense, the Committee recommends supplementing the elective courses in helicopters with modest laboratory facilities for model experiments. It also recommends an advanced course in statistical mechanics as applied to gas dynamics, introductory courses in atomic and nuclear physics for eventual application to aircraft propulsion, and an elective dealing with rockets. The

(Continued on page 390)

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THE INSTITUTE GAZETTE

(Continued from page 388)

Department's efforts to extend structural theory to include dynamic behavior and the development of appropriate courses of instruction are wholeheartedly endorsed, as is also continuation of the policy of limiting enrollment to an optimum number of promising students.

The Play's the Thing

BY IVAN J. GEIGER

THIS changing world demands versatility of its citizens. Modern society is so complicated that the greatest contributions to general welfare can be made by well-rounded individuals, even though increasing numbers of specialists are also required to play their role. It is important, therefore, that a scientist or engineer, for example, face society with something more than merely a specialized technical training. Such a person must understand human relations as well as mathematical equations and the technical language of his profession. In fact, full attainment of the professional status can be achieved only by participating intelligently in the events of society. But the accomplishment of professional status is not quickly or immediately reached. So it is that the primary problem of any educational institution is how best to equip its students to meet the changing social, economic, and industrial conditions of life. This problem confronts M.I.T. as well as it does any other institution of higher learning.

Technology is universally recognized as providing a first-class professional education in science, engineering, and architecture. For many years M.I.T. has also required its students to study subjects in the humanities and to engage in extracurricular student affairs as effective methods for building well-rounded individuals. Throughout the years its athletic program has had as its objective the development of healthy, agile bodies in its students rather than the winning of the majority of games in collegiate competitions. Recent changes in the administration of student athletics, as already recorded in The Review* make possible a further expansion of student participation in athletics, the primary purpose of which is to make its own contribution in the student's development while he is attending M.I.T. There is ample evidence to show that desirable physical, social, and moral traits can be developed, emotional control can be practiced, and good recreational habits can be formed by students through active participation in a sane and properly administered athletic program.

Problematrical situations of a social, moral, and physical nature occur frequently and with deep impact during competition in athletic games. Such participation in competitive activities affords the student opportunities for practice in getting along with his fellow man, in developing leadership, co-operation, team play, and desirable physical and recreational habits. From day to day it contributes to the feeling of well-being, which, in turn,

* The Technology Review: "Director of Athletics," June, 1947, page 474; "To Broaden the Man," July, 1947, page 544; "Athletic Board Replaces Advisory Council," January, 1948, page 162; "To Direct Athletics," February, 1948, page 213.

(Continued on page 392)

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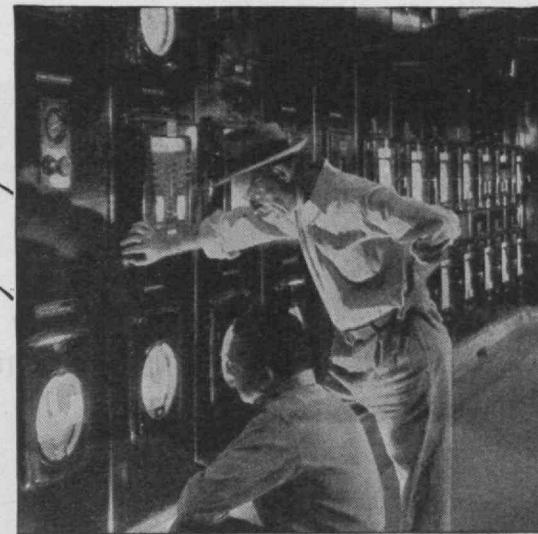
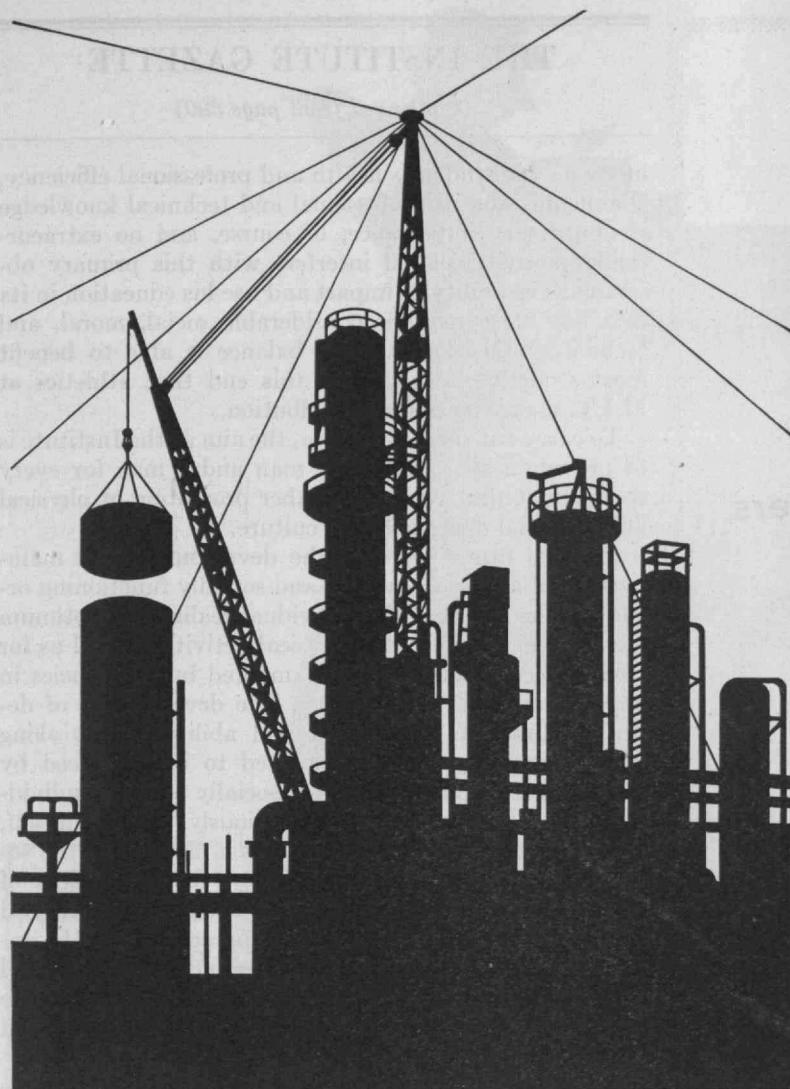
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THE INSTITUTE GAZETTE

(Continued from page 390)

increases the student's health and professional efficiency. The acquisition of professional and technical knowledge is of primary importance, of course, and no extracurricular activity should interfere with this primary objective. The ability to impart and use his education in its broadest sense requires considerable social, moral, and technical adjustments. Such balance is able to benefit most students, and it is to this end that athletics at M.I.T. makes its major contribution.

To carry out such a program, the aim at the Institute is to provide a sport for every man and a man for every sport; the objective is the further promotion of physical fitness, social efficiency, and culture.

Physical fitness requires the development and maintenance of a sound physique and soundly functioning organs to the end that the individual realizes, in optimum measure, his capacity for physical activity as well as for mental accomplishments, unhampered by deficiencies in physical strength and vitality. The development of desirable standards of conduct and ability to get along with others may also be expected to be advanced by proper athletic participation. A socially efficient individual is one who functions harmoniously within himself, in his relationship to others, and as a member of the society of which he is a part. Finally, the enrichment of human experience through physical activities that lead to the better understanding and appreciation of the environment in which men and women find themselves, and the development of recreational competency for leisure should be another end result of properly administered athletic programs.

At M.I.T. attempts to realize these objectives take one or more of three forms, depending upon the needs and desires of the students: (1) required program of athletics for freshmen; (2) intramural sports program; and (3) varsity sports program.

Some form of participation is required of all able-bodied freshmen not engaging in the intercollegiate program. A sports educative program is required in which participants are introduced into competitive activity. In this program stress is given to the development of skills in individual games and competition, such as tennis, squash, badminton, swimming, golf, and other sports which have high carry-over value to postgraduate life. Competition in group games, such as basketball, softball, and soccer is also provided. This program affords the opportunity for individuals to learn the basic fundamentals in a number of types of activity and to develop neuromuscular co-ordination necessary to accept other physical challenges.

Under traditional student leadership, but with the possibility of being able to call on a recently established Athletic Board for counsel when desired, the varsity sports program, in somewhat expanded form, continues to meet the needs and interests of students to whom intercollegiate competition makes an appeal.

For those men who are not interested in the intensity of intercollegiate athletics but who may, nevertheless, welcome opportunity to test their skills against other In-

(Continued on page 394)



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THE INSTITUTE GAZETTE

(Continued from page 392):

stitute groups, the intramural sports program has been expanded. In this category, opportunity is provided for systematically organized groups within the Institute to pit their skills against other groups, whether they be dormitory residents, commuters, or those dwelling in fraternity houses.

But whatever form of activity most interests the student, he is encouraged to participate, not for the heroics of high scores but for the contribution which he can make to his own well-being. In the Institute's athletic program "the play's the thing."

Encomium

RECENT modernization and expansion which permit the Department of Mechanical Engineering to handle increased student enrollment were particularly noted by the members of the Department's Visiting Committee * who met at the Institute on May 2, 1947. Members of the Committee inspected the space and facilities assigned to the Department and made a tour of the principal laboratories with the staff members in charge who explained their objectives and showed examples of current thesis work. Laboratories inspected included: Machine Design, Fluid Mechanics, Heat and Power, Heat Transmission, Plasticity, Testing Materials, Fatigue, Dynamics and Control, Stress Measurement, Machine Tool, Sloan Automotive, and Gas Turbine.

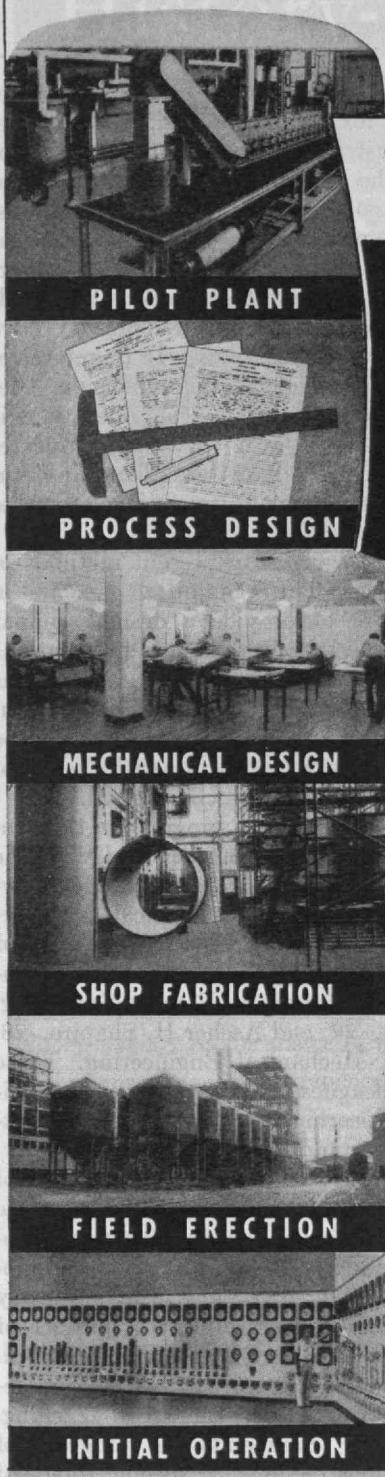
In the afternoon and again in the evening the Committee met with members of the Department and officers of the Institute for a discussion of specific questions of the Mechanical Engineering curriculum and its relation to the Departments of Aeronautical Engineering and Metallurgy. As a result of its own inspection and of the subsequent discussions, the Committee is gratified to report a high level of co-operation and teamwork in the execution of the post-war program to advance mechanical engineering science and to carry the training of students into the higher professional levels required by modern industry.

In its last report, the Committee pointed out an opportunity to unify the concepts involved in altering the shape of metals by the use of basic ideas both from mechanics and from metallurgy, and recommended that eventually work at the graduate level should be offered in mechanical processing. The Committee therefore heartily endorses the present approach to this problem in which a separate laboratory under the direction of Professor John Wulff has been established recently. The staff for the new laboratory is drawn from the Departments of Mechanical Engineering and Metallurgy and with the co-operation of these two Departments provides undergraduate instruction in metal processing.

Undoubtedly the present grouping together of facilities for casting, forging, rolling, stamping, drawing, and weld-

* Members of this Committee for 1946-1947 were: B. Edwin Hutchinson, '09, chairman, Rear Admiral Luis de Florez, '11, Norman D. MacLeod, '14, Frederick S. Blackall, Jr., '22, William H. Collins, Kenneth H. Condit, and Ralph E. Flanders.

(Continued on page 396)



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THE INSTITUTE GAZETTE

(Continued from page 394)

ing of metals, and for carrying out studies in powder metallurgy, and so on, is essentially sound. Nevertheless, the full potential in instruction in metal cutting cannot be realized so long as the Machine Tool Laboratory is not in close proximity to other metal-processing facilities. For this reason, the Committee renews its recommendations that all metalworking facilities be housed together.

It is understood that machine tools sufficient to modernize and expand the Machine Tool Laboratory have been obtained from war surplus stocks. It therefore remains to secure funds to provide adequate housing. Adequate housing for the basic manufacturing operations is considered essential to give the unity and prestige required to focus the attention of both students and employers on the application of engineering science to these ancient arts.

Considerable study was given to present methods of teaching machine design. The Committee concurs in the Department's desire to provide a design seminar room equipped with specialized reference publications and instructive examples of representative mechanisms illustrating the application of design principles. To a considerable extent, design involves an art that can be developed in the student only by practice with the aid of expert criticism, free discussion, and comparison.

The Committee was pleased with progress on the construction of the Gas Turbine Laboratory and with the addition to the Department's staff of William R. Hawthorne, '39, Associate Professor of Mechanical Engineering, and Ernest P. Neumann, '38, Assistant Professor of Mechanical Engineering, to supplement the special competence in this field of Professors C. Richard Soderberg, '20, Joseph H. Keenan, '22, and Ascher H. Shapiro, '28, Associate Professor of Mechanical Engineering. These men, together with colleagues in the Aeronautical Engineering, Chemical Engineering, and Metallurgy Departments, constitute an outstanding group of teachers.

The generosity of Alfred P. Sloan, Jr., '95, member of the M.I.T. Corporation, has enabled the Department to modernize and extend the facilities of the Sloan Automotive and Aircraft Engine Laboratory. The expanded laboratories are made possible at a time when urgently needed; they will accommodate double the number of students for whom facilities were previously provided.

Impressed by the serious concern with which the Department's staff members regarded the art of teaching, the Committee especially commends the program of monthly seminar meetings devoted to specific topics of teaching method. Increased enrollment, requiring the addition to the staff of young engineers without previous teaching experience, and the large proportion of veterans make it especially important to give attention to the effectiveness of the teaching offered by the Department. The Committee was interested to learn of the co-operation of the students in evaluating the teaching effectiveness of the staff and recommends that such co-operation be developed on a continuing basis. The Committee heartily endorses the proposal to revive the honors course for seniors who show superior aptitude for graduate work.

(Continued on page 398)

History-making power stations

No. 9 Oak Ridge Station
 CLINTON NATIONAL LABORATORIES
 OAK RIDGE, TENN.



OAK RIDGE! No need to cite pioneering achievements or record performance to call this power station *history-making*. As the source of most of the power required to produce the atom bomb, it shares the fame of the product.

But on its own, the Oak Ridge Power Station is a big story. Take its boilers, for example. There are three of them, each as high as a twelve-story building and each capable of producing more than three quarters of a million pounds of steam per hour at a pressure of 1400 pounds per square inch. At full capacity, they consume about three carloads of pulverized coal every hour. Their construction required the use of sixty-five hundred tons of steel, which in-

cluded the equivalent of 200 miles of alloy and steel tubing. These boilers rank among the largest and most efficient in the world.

Such an installation normally requires more than two years for design, fabrication and erection. But under war conditions, where the impossible was done promptly and the miraculous took but little longer, Combustion Engineering designed, built and erected these boilers in one-half the normal time.

For this and other contributions to atomic bomb production, Combustion Engineering was one of the companies that was given the Seventh Biennial Award for Chemical Engineering Achievement.

The association of C-E with Oak

Ridge and many other power stations that have made history speaks for itself. The experience, special skills and advanced engineering that have brought about this association are available to you, whether your steam requirements be large or small.



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THE INSTITUTE GAZETTE

(Continued from page 396)

HKN Honors for Three

OUTSTANDING young electrical engineers of the United States were recognized by the presentation of awards by the Eta Kappa Nu Association in Pittsburgh, Pa., this winter, during the week of the winter general meeting of the American Institute of Electrical Engineers. Suspended during the war years because security regulations prevented divulging the work of many candidates, the present awards named one man for each of the years 1942 through 1947, together with honorable mention awards.

Two M.I.T. Alumni and one additional staff member were among those to receive honorable mention for "meritorious service in the interest of their fellow men." Those selected for this distinction are: David B. Smith, '33, Vice-president, Philco Corporation, Philadelphia, named for 1942; Albert C. Hall, '37, Associate Professor of Electrical Engineering, honored in 1946; and Jerome B. Wiesner, Associate Professor of Electrical Engineering, selected for 1947.

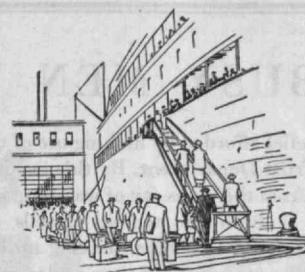
To qualify for the award, the candidate must be not older than 35 years nor be out of college for more than 10 years by May 1 of the year for which he is cited. After qualifying on these two counts the candidate is judged on the basis of accomplishment in technical, professional, and social fields. Final selection of candidates is made by a jury of awards composed of well-known engineers.

David B. Smith, Eta Kappa Nu recognition award honorable mention winner for 1942, received a bachelor of science degree in 1933 and a master of science degree in 1934 from M.I.T. and since his graduation has been affiliated with the Philco Corporation and its predecessors in Philadelphia. He began his association with that concern in the capacity of a patent engineer, subsequently rising in the next 11 years of service to the position which he now holds of vice-president in charge of engineering. He is also a director of the corporation and a member of its executive committee.

Albert C. Hall, recipient of honorable mention for 1946, received a bachelor of science degree from the Agricultural and Mechanical College of Texas in 1936. He then entered M.I.T. from which he received a master of science degree in 1938 and the degree of D.Sc. in 1943. He served a year as a laboratory instructor and then was made an instructor and assistant in charge of the Measurements Laboratory. From December, 1940, to June, 1943, he was an instructor and research engineer in developing automatic control equipment for defense applications. In July, 1943, Dr. Hall was promoted to an assistant professorship and became project engineer in the Servomechanisms Laboratory at M.I.T. In January, 1946, he was appointed director of the Dynamic Analysis and Control Laboratory.

Jerome B. Wiesner earned an Eta Kappa Nu honorable mention as an outstanding young electrical engineer for the year 1947. The University of Michigan conferred upon him a bachelor's degree in 1937 and a master of science degree in 1938.

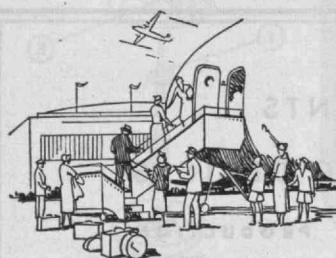
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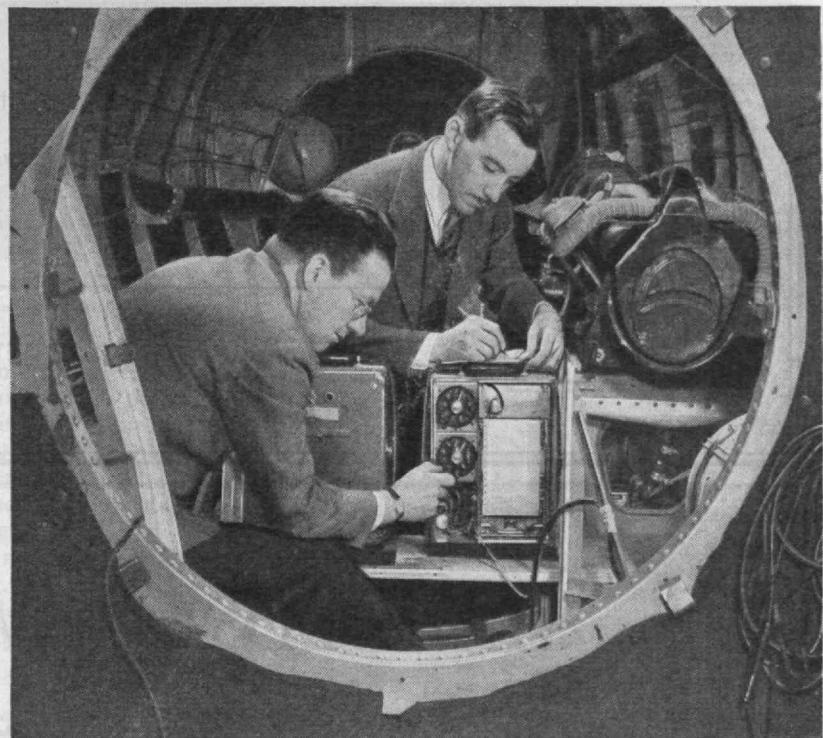
Neither darkness, fog or storm can hide icebergs, buoys, reefs and other above-water obstacles from the radar-eye of the *Electronic Navigator* developed by General Electric. Installed in the wheelhouses or chart-rooms of passenger liners, the navigator gives a radar map of the area surrounding the ship, and is capable of detecting obstacles up to 30 miles, depending on the size and shape of the object.

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THE INSTITUTE GAZETTE

(Continued from page 398)

In 1940, the Library of Congress established a recording laboratory which because it was the first of its kind called for imaginative thinking as well as technical skill. One of Mr. Wiesner's special problems was the design and construction of apparatus for reproducing and preserving old wax cylinders and for reproducing badly damaged phonograph records.

In 1942 Mr. Wiesner joined the staff of the M.I.T. Radiation Laboratory and later became the project engineer for a major radar development as well as a member of the steering committee for the Laboratory. He is associate professor of electrical engineering and continues his research as assistant director of the Research Laboratory of Electronics.

M.I.T. Students Win Essay Prizes

TECHNOLOGY students won two of three prizes in the annual essay contest sponsored by the Old South Association of Boston recently. Highest award was made to Raymond V. Dyba, '50, and an essay on Washington's life by Owne P. R. Thomas, '50, was awarded a special prize. Both are students of Richard Prescott Harmon, an instructor in history at M.I.T. Mr. Harmon will receive \$25.00 in books of his selection as a result of the good work of his students.

(Concluded on page 402)



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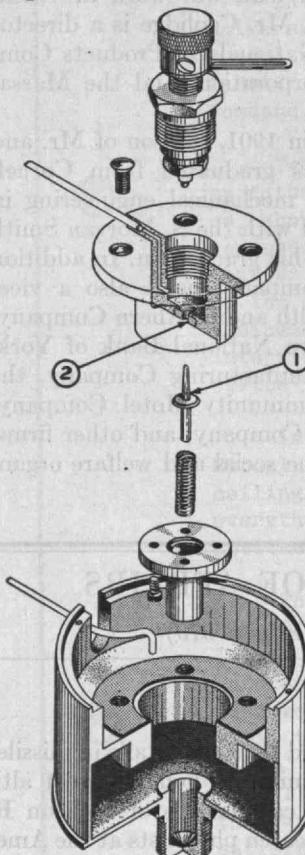
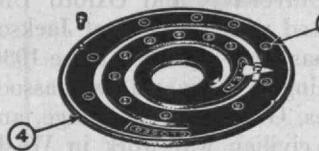
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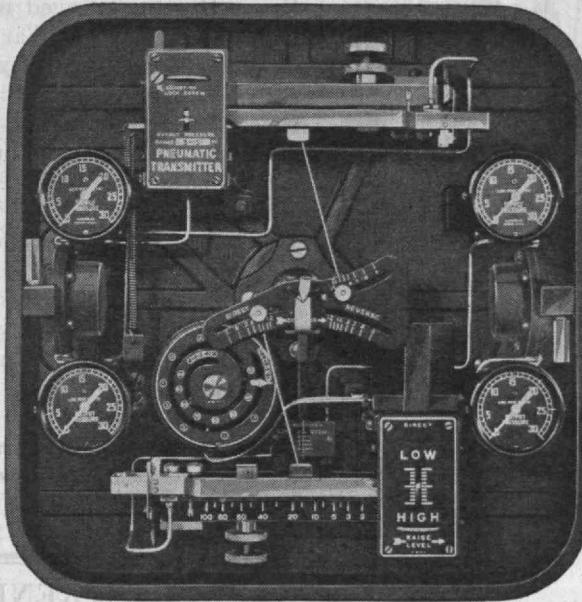
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in the 12,000 Series Level Controllers

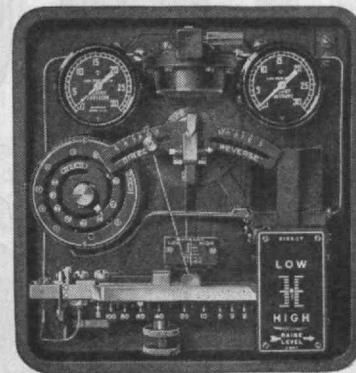


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1. Precision-machined tapered stainless steel plug
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3. Actual reset rates — graduations divided by 20
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Model 12610-20 Proportional-Reset Controller and Pneumatic Transmitter



Model 12610 Proportional-Reset Controller



Model 12610 Controller

Masoneilan proportional-reset level controllers have the entire reset mechanism *inside* the instrument case.

Reset is thus accessible, compact and protected.

The 12000 Series controllers with pneumatic reset are *package* units, complete and standard with the reset bellows and resistance unit integral, built-in. Masoneilan duplex level controllers and controller-transmitters also have this reset.

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When to Specify Reset . . .

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THE INSTITUTE GAZETTE

(Concluded from page 400)

Corporation Elections

WILLIAM A. COOLIDGE, partner in the firm of Jackson and Curtis of Boston, and President of New Enterprises, Inc., and Beauchamp E. Smith, President of the S. Morgan Smith Company of York, Penn., have been elected Special Term Members of the Institute's Corporation.

Mr. Coolidge, a native of Boston and the son of Mr. and Mrs. Thomas A. Coolidge, was educated at St. Mark's School, Harvard University, and Oxford University. He has been affiliated with the firm of Jackson and Curtis since 1927 and has been a partner since 1930. From 1936 until the beginning of the war he was associated with the firm of Ropes, Gray, Best, Coolidge, and Rugg. He was engaged in civilian war work in Washington during World War II. Mr. Coolidge is a director of Wilson Jones Company, National Oil Products Company, National Research Corporation, and the Massachusetts Safety Council.

Mr. Smith, born in York in 1901, the son of Mr. and Mrs. Charles E. Smith, was graduated from Cornell University with a degree in mechanical engineering in 1923, and has been associated with the S. Morgan Smith Company continuously since his graduation. In addition to being president of his company, he is also a vice-president of the Commonwealth and Southern Company, and a director of the Western National Bank of York, the Brandt and Warner Manufacturing Company, the Southern Company, the Community Hotel Company, the Farmers' Fire Insurance Company, and other firms. He has long been active in the social and welfare organizations of York.

THE TREND OF AFFAIRS

(Continued from page 370)

Hot Nose, Cold Tail

HOT noses are accompanied by cooling tails in missiles flown at thousands of miles an hour at great altitudes. At least this is what calculations of Jackson R. Stalder and David Jukoff, research physicists at the Ames Aeronautical Laboratory, Moffett Field, Calif., indicate

(Concluded on page 404)

BIG GAME HUNTING

NORTHWESTERN WYOMING

**Elk — Deer — Moose — Bear
Mountain Sheep**

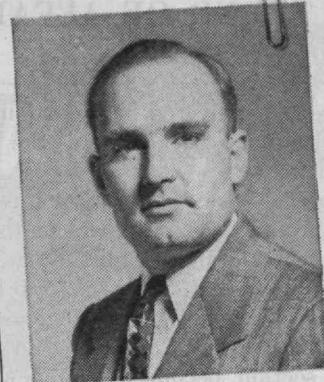
Early arrangements necessary. Moose and sheep licenses must be applied for before July 1st.

SUMMER ACCOMMODATIONS FOR FAMILIES
Trout Fishing

Pack Trips

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ROBERT S. COX, '12

DUBOIS, WYOMING



Robert E. Froom—Youngstown, Ohio

*Another post-college
career story*

F

In 1940 I was studying to be a Civil Engineer at Ohio State University. In 1941 I was inducted, spent a good deal of time "paddling a saddle" in the Horse Cavalry, and then became an Aviation Cadet. After receiving my wings, I was assigned to the Air Transport Command, winding up my activities flying the "Hump."

Two days before V-J Day, I received a cablegram telling me of my father's death. Dad had been a New England Mutual policyholder so, shortly after returning home, I was introduced to the Company's representative in Youngstown, Harley Kirkpatrick. I soon realized that Mr. Kirkpatrick had been of invaluable service to my father and to the whole family. When he learned that I wanted to go into business for myself, he suggested life insurance, and arranged an interview with the General Agent in Cleveland, and with the Home Office in Boston.

Investigation convinced me that as an Agent for New England Mutual I would basically be in business for myself--with no real ceiling on my earnings, and complete independence of action. With everything to gain and nothing to lose, I took the Company's aptitude test, and qualified.

To date, I have completed a thorough training course in the Home Office in Boston; I have attended two Company conventions; I have my own office, and I have placed a half million dollars of insurance on the lives of people in my community. Each day I discover new uses for life insurance and realize that there's no limit to the amount that will be bought in the future.

I'm certainly glad I chose life insurance as a career. Besides the earning possibilities and the independence, it gives me the deep satisfaction of knowing that my services can be as valuable to my clients as were those of Mr. Kirkpatrick to my own family.

Graduates of our Home Office training courses, many of them new to the business, are selling at a rate which produces average first-year incomes of \$3600. The total yearly income on such sales, with renewal commissions added, will average \$5700. Facts such

as these helped Bob Froom solve his career problem. For additional facts and figures, write: Mr. H. C. Chaney, Director of Agencies, New England Mutual Life Insurance Company, 501 Boylston Street, Boston 17, Mass.

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Make checks payable to The Technology Store

THE TREND OF AFFAIRS

(Concluded from page 402)

according to a report delivered before a joint meeting of the American Physical Society and the Institute of Aeronautical Sciences.

Overheating of the nose of aircraft or missiles is one of the many new problems of designers in this supersonic era. In reporting calculations on missiles traveling as fast as 13,000 miles an hour, at altitudes of 75 to 150 miles, Dr. Stalder reported that as speeds are increased a point is reached at which the faster a missile is flown, the cooler the boat-tailed section becomes. The new information that tails become cooler as noses become hotter suggests the possibility of an internal cooling system.

M.I.T. REDEPLOYS FOR PEACE

(Concluded from page 374)

Zacharias, also of the Department of Physics and earlier from Hunter College and the Radiation Laboratory, accepted the directorship of the Laboratory for Nuclear Science and Engineering. Edward S. Taylor, '24, of the Department of Aeronautical Engineering was appointed director of the new Gas Turbine Laboratory. Eugene W. Boehne, '28, came from the General Electric Company to succeed Professor William H. Timbie, retired, in charge of the Co-operative Course in Electrical Engineering. Ivan A. Getting, '33, from Yale University and the Radiation Laboratory is now professor of electrical engineering; Bruno B. Rossi from Cornell University, Victor F. Weisskopf from the University of Rochester, and Albert G. Hill from M.I.T. and the Radiation Laboratory are professors of physics; Charles DuB. Coryell, from the University of California and the Clinton Laboratories at Oak Ridge, is professor of chemistry; Hsue-Shen Tsien, '36, from the California Institute of Technology, is professor of aerodynamics; Norman J. Padelford, from the Fletcher School of Law and Diplomacy, is professor of international relations; Douglass V. Brown is the first appointee to the new Alfred P. Sloan Professorship of Industrial Management; and Jacob P. Den Hartog, from Harvard University, is professor of mechanical engineering.

On the fiscal side, Joseph J. Snyder is now filling the long-vacant post of assistant treasurer and is giving special attention to increasing the Institute's capital resources. Robert M. Kimball, '33, who during the war organized and directed the Institute's first Personnel Office, joined the President's Office as assistant to the president and has helped to carry the increased responsibilities of the office.

These men, together with the colleagues they have joined, are the real measure of the Institute's success in rebuilding itself as an educational institution. They, together with the extraordinary student body now at M.I.T., are evidence enough that the impetus and the new spirit which President Compton brought to the Institute in 1930 still guide its redeployment for future widened service. Under his leadership there has been one clear objective: to maintain here in Cambridge such a combination of facilities, programs, and men that outstanding young scholars from all over the world will seek it out as did the wandering scholars of the ancient universities.

What are **YOUR** specifications for a business career for **YOURSELF**?

Check them off against the advantages of a career
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● The opportunity to become a representative of The Equitable Life Assurance Society of the United States as a life underwriter is open to a limited number of college men who can qualify. Training will be provided.

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Is it PROFITABLE?

There is *no limit to what you can earn* as an Equitable Life Underwriter. You are compensated both for selling and serving policyholders. To the immediate commission for each sale are added renewal commissions, service fees. Thus your income not only reflects expanded sales as your skill and experience grow. It increases cumulatively as well.

Does it provide OPPORTUNITY?

Your income, right from the start, reflects the full value of your accomplishments. No seniorities, no delaying precedents hold you back. If you seek a managerial or executive position, you are helped by The Equitable's policy of filling such positions from within its own ranks.

Does it give you SECURITY?

Life insurance is a lifetime career. Even in time of depression, there is no

danger of "losing your job." Renewal commissions help cushion any decline in income from new sales. Moreover, every Equitable representative enjoys the added security of a Retirement Plan and a complete Group Insurance protection plan for himself and his family.

**Does it give you
FREEDOM OF ACTION?**

As an Equitable Underwriter, you work where you want, with the type of people you want—in effect, you build your own business. Development of your own techniques is encouraged at all times. Expert guidance, however, is always available to help you make the most of your ideas and ability.

Is it INTERESTING?

Because you continually meet new people, encounter new situations that challenge your ingenuity and judgment, few occupations are as broadening in scope or as enriching to your own personal life. No confinements. No office routine. Your actions are determined by the varying needs, circumstances and personalities of your clients.

Does it offer SATISFACTION and HAPPINESS?

In addition to being remunerative, a career as an Equitable Life Underwriter produces the solid satisfaction of seeing people enjoy the benefits you helped to arrange...a widow and children living in security...college education for a youth...a home cleared of debt...comfortable retirement for an elderly couple.

How The Equitable HELPS YOU MAKE SALES . . .

Though being "on your own" is a welcome feature of a life underwriting career, The Equitable at all times gives you the full backing of its nation-wide organization. "This Is Your FBI," a coast-to-coast radio program reaching millions each week, builds prestige and support for your work. You receive a continuing flow of tested selling aids and service ideas...are always kept abreast of the latest developments in life insurance.

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Like a physician or lawyer, a trained life underwriter is an expert in his own field. You will be respected for your professional knowledge. As a family counselor and an advisor to business and professional men, you have a standing of consequence in the community you serve.

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A Report
TO M.I.T. MEN

In 1917 Walker Memorial Building was opened, a gift from Alumni for the welfare of M.I.T. students. In addition to including offices for student activities and serving as a student social center, this building houses the dining service.

In 1946-47 nearly one million meals were served to staff and students. Morss Hall seats approximately 500 people. Thus, each chair served 2,000 people per year or 5.5 persons per day. We thank the Alumni for making these services possible.

**WALKER MEMORIAL
DINING SERVICE**

• M.I.T. •

CAMBRIDGE 39, MASSACHUSETTS

A. W. BRIDGES, Manager

TEXTILE REQUIREMENTS CONFLICT

(Continued from page 380)

tion. For example, to return to the jungle uniform in which the best solution had been a compromise between insect resistance and coolness, it might be asked: "Of what merit is an apparel fabric as a protection against the malarial mosquito?" Infection of American troops in the tropics was almost universal and hospitalization on the active front was avoided only by use of the suppressive drug, atabrine. In view of the wide prevalence of the disease and the effectiveness of medical research in devising means of checking it, a strong school of thought exists at present in the armed forces that the requirement for insect resistance could well be eliminated from this item, thus permitting the adoption of lighter weight materials which would be more porous, and therefore cooler for the wearer.

Circumvention is an effort to avoid the problem of providing opposing characteristics by an entirely new approach in which the conflict no longer exists. To illustrate the effective use of this technique, we return to the sleeping bag, filling material for which should be compressible to facilitate portage, yet of sufficient resistance to body pressures when in use to provide good thermal insulation. During the war a mixture of 40 per cent down and 60 per cent waterfowl feathers was considered eminently satisfactory for the purpose. However, experiments carried on to find a suitable substitute for this material because of wartime scarcities revealed that this combination was not the ultimate solution. Actually, it represented somewhat of a compromise, since it was of low-bulk density and high compressibility, yet could be fluffed into an open, loose state even after having been subjected to continuous compression. Since it was obviously impossible to find a single filling material which would incorporate the diametrically opposite characteristics which were desired, the Army developed an entirely new concept, calling for the use of an inflatable pad in conjunction with the sleeping-bag assembly. Filled with air, the pad furnished the necessary insulation for the under portion of the bag while the feathers and down provided warmth for the upper portion. Low bulk in portage is achieved by release of the air and the highly compressible nature of the feather-down mixture. This latter feature is of great military importance, since the fighting efficiency of the arctic soldier is seriously impaired by a pack load of excessive or even considerable weight.

(Continued on page 407)

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TEXTILE REQUIREMENTS CONFLICT

(Continued from page 406)

Toward the end of World War II a new approach was proposed in the rendering of cellulosic structures resistant to fungus growth. Whereas previous attempts had been directed toward destruction of the invading micro-organisms, military scientists set out to effect a modification of the cellulose molecule so that it was no longer receptive to fungus attack. Since the mildew growth was powerless to degrade the modified cellulose, the necessity for a fungicide, with its potentially harmful dermatological effects, is removed. Also, durability is achieved, for the solubility requirement is also eliminated in the new approach.

Finally, the synthesis technique is an effort to reach the ideal solution by the development of entirely new materials in which the two conflicting requirements are no longer at variance. The classic example of synthesis is the story of the glider tow rope. Use of wire ropes or hemp cables in place of airplane-glider pickup ropes resulted in overacceleration and shock to the plane and glider, as well as to their respective occupants. To absorb the initial shock and provide a smoother take-off, a material of high strength and immediate elasticity was required. It was necessary to reject rubber for this purpose in spite of its great inherent elasticity because of its immediate recovery or snapback effect. High immediate stretch and slow recoverability were conflicting properties in known natural materials, but a newly developed polymer called nylon, in which both characteristics were found to coexist, proved to be the happy

solution to this problem. Here was an ideal synthesis, although in this case the original investigators had no intention of developing a superior tow rope for airplane gliders.

A synthesis of more immediate interest is the vapor permeable coatings which are being explored with Army support. Here the pertinent qualities of water (hydrostatic) resistance and water vapor permeability can be controlled accurately in experimental runs, and optimum values can be chosen for specific end uses.

Warmth without weight was recognized before the war as the ideal combination of characteristics for clothing to be worn in cold climates, and its attainment posed a complex problem in textile manufacture. In standard constructions, thickness, upon which insulating power is so dependent, is directly related to weight. Modifications in the weaving structure, such as in the case of pile fabrics, napping operations in which the yarn surfaces were scratched up to form a second fuzzy surface over the fabric plane, and use of various types of fibers, were among the steps taken to increase the thickness without producing a corresponding gain in fabric weight. Although such measures were effective in some degree they failed to reduce the clothing load of the individual camping in the arctic to an extent consistent with operational efficiency. To achieve the desired warmth-weight ratio, battings of fine synthetic fibers, fluffed and resin-impregnated to retain shape, were quilted between highly wind-resistant fabrics. Thus was developed the padded clothing so well received by troops stationed in extremely cold regions.

(Concluded on page 408)



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TEXTILE REQUIREMENTS CONFLICT

(Concluded from page 407)

Review of these approaches throws some light on the balance of the textile research program undertaken by the armed forces. Compromise is a function of applied research and is reached after a planned investigation of the effect of the base material, the construction, and the finish. Elimination is achieved through uninhibited questioning of all military requirements by responsible analysts and by a constantly dubious attitude on the part of technologists striving to attain the required properties. Circumvention varies in its demand for applied *versus* fundamental research depending on the problem at hand. In this technique the problem may be avoided by application of an entirely different phenomenon without incurring the previous conflict. Where the scientist must develop basic facts about the properties of the substitute material or process, the problem becomes more fundamental than when he can use the results of the work of others. Synthesis represents head-on attack of the conflicting requirements which constitute the difficulty, with no thought of compromising or circumventing; it assumes that there is an ideal solution to the problem and seeks to uncover it by careful consideration of the fundamentals underlying each phenomenon involved.

Each problem requires separate consideration and there is no attempt on the part of Army research administrators to limit the balance of research under an arbitrarily established quota system. The challenge is directed to the individual project engineer, chemist, or physicist and it is his responsibility to exhaust each approach. We all stand to receive definite advantage from such research and the benefit received is on a common and personal basis rarely matched by other military studies. This point of view has been pungently expressed by one eminent physical chemist who said in considering the problem of wear resistance: "This interests me — it is as personal as the seat of my trousers!"

MAIL RETURNS

(Continued from page 364)

Unfortunately, railroad managements committed to the purchase and use of expensive Diesel power must go further and see that the Diesels are utilized regardless of cost. This quite frequently means that skilled personnel are diverted entirely from steam-locomotive servicing and all available man power is put to work to get the most out of the Diesels. Frequently, we hear that trains are actually held to make Diesels available.

While very little attempt has been made to do so, steam locomotives can be designed and built to outperform Diesels in many cases, and economically speaking, to equal the performance in the others. But to do this universally both the railroads and builders would have to adopt a program something like this: standardize power for certain services; design into steam-power units the advantages already known and which will materially improve performance; equip shops for expediting maintenance, similar to the Diesel shops; give steam power the same expert attention that now obtains for Diesels; have the best fuel available for steam engines, as is the present practice for Diesels; improve backshop techniques to reduce overhaul costs; train men to do jobs as correctly and efficiently on steam locomotives as on Diesels; make comparisons with only modern Diesels *versus* modern steam on an equal basis as to tonnage and other significant factors.

(Concluded on page 410)

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MAIL RETURNS

(Concluded from page 408)

Without waiting for the establishment of a comprehensive program for the future, however, it is quite possible to make substantial improvements in the operation of existing steam locomotives. Significant improvements might be expected from a program that would modernize engines by the addition of devices already available that will make for better performance, decreased maintenance, and lower operating costs; insist that steam locomotives operate with good coal; introduce maintenance and shop practices suggested above.

It is generally recognized that the nation's oil reserves are in danger of being exhausted in the not too distant future, whereas at the present rate of consumption the supply of coal will last for 3,000 years. This alone should be sufficient reason for railroad managements to concentrate on the development of coal-burning motive power now that Diesels threaten to fill the market.

At the present time, railroads are the only means of land transport which can economically burn coal as fuel. Consider the situation that might develop some years hence if the present program aimed at complete dieselization is continued; the nation would then be dependent partially on imported oil since it is unlikely that production of synthetic oil from coal will be adequate to meet normal demand. If, then, the United States became involved in another war, a decrease in the supply of imported oil, plus an increased demand, would create a fuel shortage for the military and a breakdown in national transportation.

Developments now going on in the combustion field with coal and devices will prove, in many instances, that steam can outperform Diesels on an equal basis. A steam locomotive, operated by the New York Central Railroad, equipped with poppet valves and a new type of stoker, ran as high as 29,000 miles per month in high-speed passenger service.

The Chesapeake and Ohio coal-burning steam turboelectric locomotives will have all of the tractive characteristics of a Diesel-electric. Speedwise and powerwise, steam locomotives now in operation can very easily keep up with today's modern pace. Not only does the steam locomotive have no stomach ulcers but its new stomach, in the form of all-welded boilers, will be even better than its old one. When the coal-burning locomotive is fed mud and rocks, it cannot digest them. When given good fuel, it is smokeless. Unfortunately for the steam locomotive, it has been able to digest a certain amount of mud, and because of this, it has been imposed upon and overdosed.

Statistics show that about 30,000 steam locomotives comprise the backbone of American railroad transportation, and as improvements now developed are applied there is every reason to believe that they will still retain their position until something requiring cheaper fuel than the Diesel comes into being.

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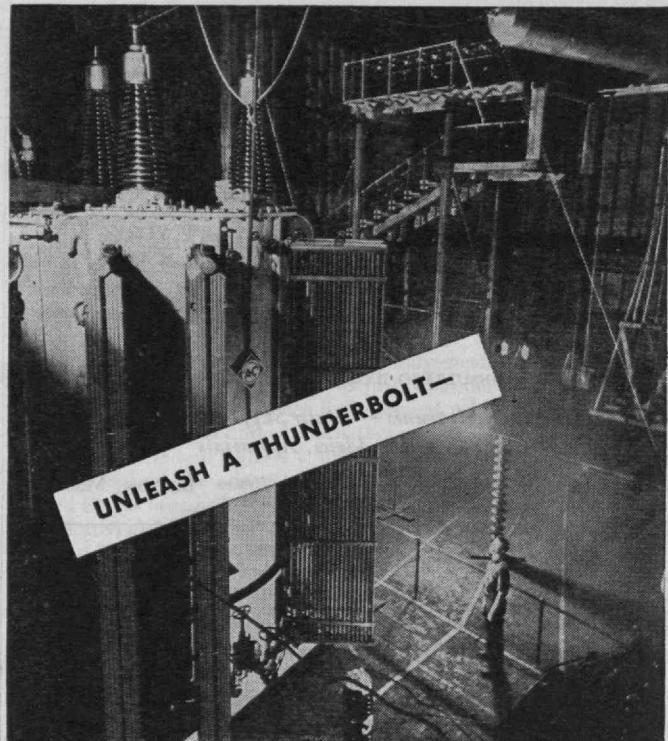
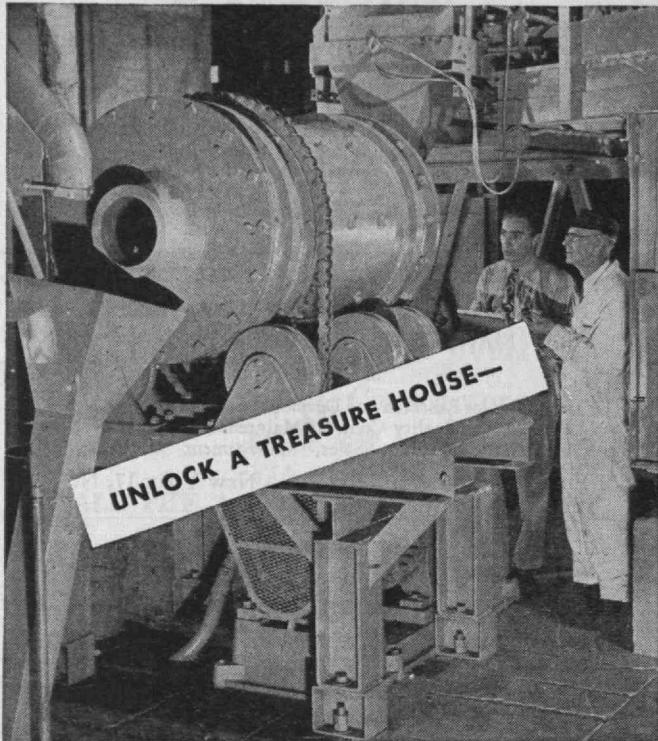
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CLUB NOTES

M.I.T. Club of East Tennessee

A meeting was held on February 3 at the Highlands Grill in Knoxville. Immediate occasion for the meeting was the presence in Knoxville of four students from the Institute who were engaged in a tour of projects on the Tennessee Valley Authority. In the absence of President Hickman '36, our Vice-president, Albert G. Kern '34, presided. No business was transacted. After dinner, Mr. Kern called on the students for informal remarks on subjects of their own choice. Bert Eakin, a freshman, spoke first, principally on the work of the National Student Association and of its Technology section. The N.S.A. has been the sponsor of the student tour. Edward A. Mullery, a senior in Course X, spoke of the work of the Chemical Engineering students. Reinhart J. Ruge, a graduate student in Course I and a resident of Mexico City, told of his efforts to enter Technology and of some of the engineering problems of his country. Salman Mashal, of Basra, Iraq, concluded the students' talks by remarks on the problems faced by his country. All four talks were instructive and thoroughly enjoyed by the Alumni and their wives.

Because of the war, this was the first regular meeting in several years. Several members had in the meantime entered new fields of activity, and some of these were called upon to comment briefly on their new work. Howard P. Emerson '28, spoke of his duties as head of the new course in industrial engineering which will be in full operation at the University of Tennessee in the fall of 1948. G. E. Farmer '22, spoke of the telephone system carried on the transmission lines of the T.V.A. power system. And F. A. W. Davis '15, told some of the tellable portions of his five years of work at Oak Ridge.

Other Alumni present included William P. Bealer '17, George W. Bergman '27, Robert B. George '23, John I. Hale '20, Vancourt M. Hare, Jr., '23, Arthur R. Holbrook '04, George P. Palo '28, Frederick G. Roth '42, and Dana M. Wood '06. The total attendance was 25. The meeting adjourned at about 10:30 P.M., but many stayed on and chatted informally for another hour, thus setting some sort of record for length of a club meeting and indicating the success of the gathering.—GEORGE P. PALO '28, Secretary, Tennessee Valley Authority, 202 Union Building, Knoxville, Tenn.

Niagara Falls M.I.T. Club

On February 17, members of the Club were privileged to hear H. E. Lobdell '17 address a dinner meeting of the Buffalo chapter. Among those present were the following: Bill Hope '36, President; Arnold Arch '40, Secretary; Donn Barber '42, Ed Kane '47, Al Sargent '39, and Cal Taft '44.

The meeting was held at the beautiful University Club of Buffalo, and those of us from the Falls were pleased to have the opportunity to hear Lobbie—in fact, having been at the Institute when he was in his prime as dean of students, we all knew him quite well. After the festivities, your Secretary had a friendly tête-à-tête, during which he heard that Lobbie had recently spent a week end in Chicago with Major General Manton S. Eddy, the Secretary's corps commander in Luxembourg, France, and Germany. It was quite revealing to get the General's point of view on what a grand job the XII Corps of the famed Third Army did, especially to one whose point of view was that of a lowly company commander of Company "A" of the 91st Chemical Mortar Battalion.

The Club is planning a dinner dance for the late spring and hopes to have it either at the Niagara Falls Country Club or somewhere down near Jim Neal '15, in Lockport.—ARNOLD ARCH '40, Secretary, 910 Vanderbilt Avenue, Niagara Falls, N. Y.

M.I.T. Club of Albany

The Club held a regular dinner meeting in the East Room of the Wellington Hotel on March 3. Philip D. Jones '47, who is employed by the New York Telephone Company was received as a new member, and with special pleasure Carl H. Anderson '27 was welcomed back to Albany, after having been in Utica and Syracuse for a number of years. This being the first of a series of meetings at which we hope to enlist the club members as speakers, Charles W. Rankin '31 spoke on the "Application of Physics to Criminal Investigations." Mr. Rankin has been with the scientific laboratories of the New York State Police since 1937. He is in charge of the laboratories' spectrograph. He described the spectrograph and gave specific illustrations of its use in toxicological cases to determine the amounts of toxics and other substances in the organs of humans and animals after death. He also spoke of its use in analyzing residues left on broken safes, forced windows, and automobiles involved in accidents. The success of this talk suggests that we have much talent that we should be using.—GEORGE W. SCHAIBLE '30, New York Telephone Company, 158 State Street, Albany, N. Y.

Southeastern M.I.T. Association

On Tuesday evening, February 17, the Club assembled at the Mountain Brook Country Club, to honor Karl T. Compton, President of the Institute. The dinner was preceded by an hour of get-together at the bar, during which Dr. Compton had time to meet all the members present.

President Fertig '24, called upon Dr. Compton for a talk. Dr. Compton assumed that we were most interested in what the Institute had been doing during the war and in its plans for the future. He elaborated

on points of information which had been touched upon by Alumni Executive Vice-president Lobdell '17 in November. After his short talk, Dr. Compton asked whether there were any questions. This inquiry started the most interesting part of the evening. What each club member most wanted to know was what Dr. Compton had done during the war. Their appetite for such information had been whetted by remarks made by Dean Lobdell. Accordingly, Dr. Compton told of his work for the Office of Scientific Research and Development with Vannevar Bush '16, followed by that for the Rubber Committee, in radar, and finally with O.S.R.D. again, and so into the Philippines with MacArthur. By the time he had answered all the questions, the members were aghast at the amount of work he had done, beside running the Institute.

The purpose of Dr. Compton's visit to Alabama and Birmingham was twofold. He had been invited by the Rushton Lecture-ship to give three lectures at Birmingham Southern College. These lectures were open to the public, and the response was tremendous, greater than for any other series of recent years.

The club dinner was attended by the following residents: James W. Shook '98, Oscar G. Thurlow '04, Robert C. Stobert '12, Prescott V. Kelly '13, Fernand C. Weiss '13, Merrill E. Pratt '16, Willard M. Mobley '21, Harold F. Cotter '23, Douglas F. Elliott '24, G. J. Fertig '24, James Lord '24, Henderson L. Holman, Jr., '25, William H. Hassinger, Jr., '27, Thatcher H. Mawson '27, Laurence D. Luey '29, Donald C. Sanford '32, John W. Powers, Jr., '33, Charles B. Gamble, Jr., '34, Buckley Crist '35, Raymond E. Strickland, Jr., '38, David Thurlow '41, J. Henry Henderson, Jr., '42, Theodore F. Randolph '45.—JOHN W. POWERS, JR., '33, Secretary, 401 Yorkshire Drive, Birmingham 9, Ala.

M.I.T. Association of Cleveland

Our first meeting for the 1948 season was held in the English Room of the Hotel Carter on March 4. We were very happy to have with us Jim Killian '26 from Cambridge and to be told of current affairs at the Institute. We are planning our meetings together with the Western Pennsylvania Club in an effort to conserve time and cost for our guests. On March 4, we received an impromptu, but most enlightening, talk by Dick Valentine '33 concerning a visit which he made recently to Czechoslovakia. The information was extremely timely in that it followed directly on the heels of the Communist ascension to power. Dick had an experience which would be well worth repetition to others.

Those in attendance were the following: F. W. Crosby '90, W. A. Cleaveland '98, A. A. Gould '10, C. H. Reed '20, J. W. Gartland '21, A. Ilsley Bradley '21, H. H. Spengler '22, R. H. Smith '23, W. H.

Robinson, Jr., '24, Horace Bush '26, S. R. Howe '26, J. R. Killian, Jr., '26, E. E. Staples '26, D. E. Elmendorf '26, W. C. Sessions '26, H. P. Ferguson '27, F. E. Rhinehart '27, W. H. Waite '30, Bartholomeo DeLorenzo '30, R. S. Cook '30, R. H. Valentine '33, K. M. Warren '35, R. F. Flood '35, Goodwin deRaimes '37, J. P. Auwerter '38, E. O. J. Helland '40, V. deV. deOlloqui '40, W. R. Taylor '40, C. W. Schwenzeier, Jr., '41, L. D. Fykse '41, W. D. Bowman '44, C. F. Lenhard '45, E. J. Dempsey (guest). — G. R. Young '37, Secretary, The Weatherhead Company, 300 East 131st Street, Cleveland 8, Ohio.

M.I.T. Club of Milwaukee

Our midwinter meeting was held on February 23 in the Sternewirt Room at the Pabst Brewery. Thirty members and one guest attended. Fred R. Gruner '41 presented an excellent historical summary of discoveries leading to the development of the atomic bomb. He also showed colored motion pictures of the Bikini tests. — A. PRESTON HEINTZ '38, Acting Secretary, Route 2, Box 85, Waukesha, Wis.

M.I.T. Club of Quebec

Our Club held a luncheon meeting on February 18 at the Hotel de LaSalle in Montreal. Our guest speaker was Ernst A. Hauser, Associate Professor of Chemical Engineering at M.I.T. Dr. Hauser proved to be a witty speaker and managed to treat with humour of such serious topics as very recent developments at M.I.T., and the importance of graduate studies and research, not forgetting considerations on chemical engineering, and specifically, on synthetic rubber. Dr. Hauser was introduced by Paul Kellogg '11, President of the Club, and thanked by T. L. Brock '38.

Members attending, who numbered 25, were as follows: H. A. Audet '45, Q. R. Ball '46, A. E. Bourbeau '27, T. L. Brock '38, M. L. Carey '23, H. S. Chandler '08, Henri Gaudet '34, W. S. Hart '00, S. J. Hungerford '33, George Kaneb '40, Wilfred Kaneb '43, Paul Kellogg '11, Huet Massue '15, F. D. Mathias '36, J. C. Merritt '16, W. K. Nonneman '36, H. C. Pearson '23, J. M. Raymond '34, E. C. Richardson '07, A. D. Ross '22, G. E. Rousseau '25, R. S. Sproule '47, J. N. Stephenson '09, J. H. Townsend '24, W. W. White '29.

Clifford B. Purves, professor of chemistry at McGill University, who was once on the M.I.T. Faculty, was also our guest, as responsible for the coming of Dr. Hauser to Montreal, on behalf of the Montreal section of the Chemical Institute of Canada. — JACQUES R. LAURENCE '40, Secretary, Ecole Polytechnique, 1430 St. Denis Street, Montreal 18, P.Q., Canada.

M.I.T. Club of Philadelphia

The officers and executive committee met at the Meridian Club for dinner and a business meeting on March 4. Plans were laid for the next several meetings by H. W. Anderson '15, P. M. Alden '22, H. S. Dimmick '22, C. W. Stose '22, R. L. Hershey '23, R. M. Harbeck '28, G. T. Logan '29, F. S. Chaplin '32, Proctor

Wetherill '34, W. F. Corl, Jr., '39, B. A. Kleinhof '39, S. K. McCauley '41, and W. H. Peirce '46.

Our spring meeting will be held at 6:30 p.m. on Tuesday, May 18, at the University Club, 16th and Locust streets, Philadelphia. All itinerant Alumni as well as local Tech men are cordially invited to join us in an evening of good fellowship.

For information about Alumni in Philadelphia and vicinity, call Boulevard 0287. —SAMUEL K. McCAULEY '41, Secretary, 288 Copley Road, Upper Darby, Pa. WILEY F. CORL, JR., '39, Assistant Secretary, Box 358, Bryn Mawr, Pa.

M.I.T. Club of Western Pennsylvania

The Club held its March meeting on the 15th at the University Club in Pittsburgh. A group of 28 members and guests attended, including four members who came distances of 50 miles or more. After an excellent buffet supper and a very brief business meeting, President Lafan '19 turned the meeting over to George Hoffman '28, entertainment chairman. Hoffman introduced a color-sound motion picture made available by the American Cyanamid Company, entitled, "Use of Resins in Paints and Enamels." H. J. West, assistant manager of the American Cyanamid Company's Bridgeville Works, expanded the theme of the picture and gave the entire group a look behind the scenes in this interesting field which has developed so rapidly over the past few years.

George Hoffman then presented two films made available by the General Electric Company. The first film dealt with the problems of transportation by rapid surface transit car, street car, trackless trolley, and bus. The picture pointed out that since in most cities the size and location of streets are established, the only solution to problems of transportation lies in adequate planning for the best utilization of the streets and facilities available. The second picture emphasized the importance to every community of pure water. It went on to explain the importance of proper handling of sewage and described how it is possible to return the streams and lakes to a very nearly natural state so that they can again become available for swimming, boating, fishing, and other recreational purposes, as well as a source of supply for drinking water and industrial requirements. Today, the problem of purification is made increasingly difficult by the amount of sewage being put in our streams by communities and industries.

Those attending the meeting were as follows: W. U. C. Baton '04, H. L. Lang '09, H. H. Hall '14, R. G. Lafan '19, E. A. Soars '21, C. T. Barker '27, D. W. Dimock '28, R. D. Hoak '28, G. M. Hoffman '28, H. M. Baker '29, B. M. Hutchins '32, S. D. Miller '32, Henry Rockwood '32, J. L. Thistle '32, I. E. Madsen '33, A. K. Redday '34, W. J. Bates '35, C. C. Lawrence '38, G. I. Clark '41, C. N. Cresap '42, E. J. Cole '44, D. W. Hoffman '47. — WILLIAM J. BATES '35, Secretary, 141 Woodhaven Drive, Pittsburgh 16, Pa.

M.I.T. Club of the Connecticut Valley

The Club met on March 17, at Gleason's Rathskellar on Suffolk Street, Holyoke, for a dinner meeting with the ladies invited. A very tasty broiled lobster dinner was served to 47 members and their wives.

The President announced that the Club had a paid-up membership of about 160, the largest in its history and a direct result of the membership drive headed by Theodore Lange '01, membership chairman, with 15 of his committee co-operating in a direct call and telephone solicitation. The Secretary announced that plans at the Institute have been completed for the Alumni Day exercises and a buffet luncheon in the Great Court on Saturday, June 12, a date which all Connecticut Valley Alumni should put in their date book. The President then appointed a nominating committee consisting of Robert Albro '07, chairman, Maurice Trouleyre '32, and Richard Bettes '44, who are to meet and bring in nominations to the annual meeting on May 12. The meeting was then taken over by the speaker, Kenneth G. Merriam '22, II, professor of aeromechanics at the Worcester Polytechnic Institute, who gave a very interesting talk on "The New Look in Aviation and Antiaircraft."

Professor Merriam stated that through most of the war he was located in Washington and New Mexico, where he organized a school to teach the future Army instructors ack-ack antiaircraft technique and especially V-bomb defense. This branch of the service became so effective during the war that after the invasion of Normandy, over Antwerp alone, ack-ack shot down 890 of a thousand V-1 buzz bombs launched by the Germans; he stated, however, that the V-2 bombs, which had not been used in any extent up to the end of the war, will be much harder to intercept with ack-ack because they are so fast and go so high their trajectory angle is very steep and presents a problem of hazard to the gun team shooting to intercept them. It would be destroyed by fragments dropping down from their own fire. He described all types of war and civilian planes including gyros and stated that within the lives of everyone present we should see planes leave the United States, climb above the stratosphere, where they would shut off power and wait for the earth to turn until they were over Australia two hours later, then come down to land. The question period revealed that he believed a greater danger exists from germ bombs than from buzz bombs or atomic bombs and that they cost much less than the atomic bomb.

Seated at the head table were T. F. Lange '01, M. R. Edwards '22, Secretary, T. W. Hafer '35, Treasurer, A. D. King '32, President, K. G. Merriam '22, and A. B. Marlow '29, Colonel, United States Army Engineers, attached to Westover Field, Chicopee. — MINOT R. EDWARDS '22, Secretary, Holyoke Heater Corporation, 54 Waltham Avenue, Springfield 9, Mass.

M.I.T. Club of Central Florida

About four times a year the members of this Club get together for dinner and an evening of good fellowship. Because of the large area assigned to the Club, its meetings are held in various cities. The late summer gathering took place at the University Club in Tampa. Professor Emeritus Arthur A. Blanchard '98 gave us an interesting talk on atomic energy. On November 7, the Club met at the St. Petersburg Yacht Club. There we had the pleasure of hearing H. E. Lobdell '17, Executive Vice-president of the Alumni Association. Dean Lobdell revived old memories of the Institute and brought us up to time on present developments.

Our last meeting was held on March 5 also at the St. Petersburg Yacht Club. After a fine chicken dinner, the group was entertained by P. M. Crider, superintendent of the new plant of the Victor Chemical Company at Tarpon Springs. This new industry is a large producer of phosphorus and phosphoric acid. The Club's President, A. W. Higgins '01, was out of the city, probably borrowing a few more millions for his Florida Power Corporation. Our former President, M. R. McKinley '19, therefore presided. McKinley is general manager of the Tampa Electric Company. Other members present were as follows: (from St. Petersburg) Charles J. Belden '09, Joseph W. Clary '96, Archibald H. Kinghorn, Jr., '20, William H. Mills '34, Sanford E. Thompson '88, Robert B. Todd '08, William W. Upham '23, and J. Allen Weaver '23; (from Tampa) Laurence P. Geer '15, and Max J. Mackler '17; (from Dunedin) James J. R. Bristow '14, Charles G. Merrill '88, and Benjamin L. Skinner '42; (from Sarasota) David H. Hayden '99. — WILLIAM H. MILLS '34, Secretary, Mills and Jones, Inc., Post Office Box 264, St. Petersburg 1, Fla. W. W. UPHAM '23, Assistant Secretary, 39 Fourth Street South, St. Petersburg, Fla.

Washington Society of the M.I.T.

The dinner meeting on March 8 was one of the most interesting and educational events ever held by the Society. It was a "Technological Toot" for the members, who outnumbered the wives and children by a slight margin — 46 to 41.

After a very short business session, President Beitzell '28, introduced the speaker, Gordon Volkenant, associate director of research for the Minneapolis Honeywell Regulator Company, who spoke about "Electronics, Gadgets, and Gimmicks." Dr. Volkenant traced the development of electronic tubes, or electrical valves, and explained their operation in straight-forward simple language and with numerous models. He outlined the many applications and different fields in which electronics have played and will play an important part. The fact that the group listened to Dr. Volkenant for more than two hours and still wanted to hear more attests to his ability and showmanship. J. A. Furer '05, Admiral (Retired), closed the meeting with a bang when he pressed a button on a small (cigarette-sized) radio sending set

which was tuned to a firing device located 20 feet away.

The following members attended: 1889: G. W. Stone; 1890: J. G. Crane; 1893: B. P. du Bois, G. W. Stose; 1902: G. E. Marsh; 1903: W. L. Cook; 1904: A. M. Holcombe; 1905: J. A. Furer, E. F. Kriegsman, B. E. Lindsly; 1909: B. A. Robinson; 1911: W. H. Martin; 1912: M. C. Mason; A. M. Pedersen; 1915: A. D. Beidelman, J. W. Conover, W. S. Thomas; 1916: F. P. Upton, W. E. Wentworth; 1917: H. M. Baxter; 1918: H. D. Manuelian, A. F. Murray; 1919: L. J. Grayson; 1920: John Nolen; 1921: Larry Conant, P. R. Taylor; 1922: R. J. Hogan, W. K. MacMahon; 1924: Jean MacInnes Ashton, J. D. Fitch, J. L. Piland, R. P. Schreiber; 1925: L. F. Kreek; 1926: S. J. Cole; 1928: A. E. Beitzell, G. D. Mock; 1929: A. J. Perry, J. A. Plugge, N. P. Stathis, 1930: G. L. Arnold, N. C. Nelson, F. W. Turnbull; 1932: F. M. Moss; 1933: S. F. Allison, C. W. Bohrer; 1935: K. J. Winiarski; 1936: D. E. Varner; 1937: R. E. Black; 1940: J. H. Daniel; 1941: M. J. Block, Edith L. Rorner Corliss; 1943: J. U. Jovellanos; 1944: Lester Simon; 1947: J. A. Contegni. — JOHN A. PLUGGE '29, Secretary, 35 Oxford Street, Chevy Chase, Md. ALBERT F. BIRD '30, Review Secretary, 5070 Temple Hills Road, Southeast, Washington 20, D.C.

CLASS NOTES

1886

The retirement of Walter Renton Ingalls as the director of the American Bureau of Metal Statistics was announced at the meeting of the bureau's executive committee held on December 17. Dr. Ingalls had directed the bureau since it was first formed in 1921 to supply statistics covering the production and consumption of the principal nonferrous metals. Since then the bureau has come to be recognized as the outstanding source of authoritative information on production and consumption of the nonferrous metals on a world-wide basis. Before formation of the bureau, Dr. Ingalls was editor of the *Engineering and Mining Journal* and a well-known consulting metallurgist.

The Secretary had a letter from Wilson H. Low on March 8, enclosing his dollar and saying that he is now living in Sheridan, Wyo., having retired from business in Santa Barbara, Calif., about 1930. He is blessed with good health and plays nine holes of golf every day in the summer. He must be prosperous, as he sends me \$3.00 when I asked for only one! Two, however, have gone back to him, as one is plenty at present, and he won't have to dock his caddy when summer comes and he gets on the golf links again.

My recent card to the members has brought a reply from Doolittle of Yonkers, N.Y., who admits absent-mindedness! He received my circular letter of December 6 but omitted to read it — a very honest admission! He praises the education and training he got at M.I.T., enabling him to "keep his feet on the ground and his head above water" during the 10 years he spent as railroad executive, the 20 as New York representative of a large chemical industry, and

another 20 as his "own boss," manufacturing and marketing chemical specialties. He has now retired and is trying to "catch up with the many things I wanted to do in more strenuous days." Good luck to you, Doolittle. Your name is evidently not appropriate to your earlier experiences, however well it may typify your present situation.

Another member rather late in receiving my circular letter and therefore in replying is William C. Smith '86, S.M.A., now living in Bridgton, Maine. He speaks of his connection with the Class of '86 S.M.A. and affiliation with '86 M.I.T. through the Alumni Association but doubts whether he is entitled to be considered a member of M.I.T. Entirely too modest, say I. Through the Alumni Association we are all "brothers in Israel" and, as alumni, stand on the same footing, so I am informed. Even humble nongraduates like the present Secretary of '86 M.I.T. may hold their heads up through the fraternity of the Alumni Association and are given a seat at the table!

The Assistant Secretary has received word from Arthur T. Chase, present Secretary of '86 M.I.T., that he entered M.I.T. in 1882 from the Haverhill, Mass., high school and continued with '86 until the middle of the junior year, when eye trouble compelled him to take a couple of years' rest. After recovery, he was with the Weston Electric Company of Newark, the Thompson-Houston Company of Lynn, Mass., the Thompson-Houston Motor Company of Boston, the Boston Blower Company of Boston and Readville, and the Edison Electric Illuminating Company of Boston. He then returned to Haverhill and opened a general electric shop, installing electrical apparatus in homes and factories. In 1902, he sold his electrical business and joined his brother's firm of Harvey S. Chase and Company, the well-known accountants, and in due time was admitted to the fellowship of Massachusetts Certified Public Accountants and later to the American Institute, of which societies he was recently elected an honorary member. After Harvey S. Chase retired in 1922, he continued with the succeeding partnership of Seamans, Stetson, and Tuttle as a special partner and remained with them until his retirement in 1947. His first wife died in 1934, and in 1943 he was married to Miss Sally Freeman Dawes of Island Creek (Duxbury), Mass., where he is now living. By his first wife he had one daughter, Priscilla, who married a Seattle, Wash., architect and lived in Seattle with their twin daughters until her death a few years ago. As secretary of the Class of '86, he requests that members keep him informed as to any new developments and suggests that they combine in trying to get Harry Clifford to open up and tell the Secretary something about his doings since he resigned from active work with Harvard. His address is 942 Beacon Street, Newton Center, Mass., and up to the present he is as dumb as the proverbial oyster.

A letter from Gamwell, in Bellingham, Wash., dated March 6, gives the additional information that he had promised. He writes as follows: "I am having a grand 'old age,' doing things I have long wanted to do and didn't have time to do while I was working. That type of occupation seems to keep me

busier than I have ever been before. Botany and natural history lead, with Pacific-Northwest history a close second. One rather extensive study has been the high mountain flora of the two Pacific ranges, the Cascades and the Olympics. The latter constitute the last primitive region of continental United States and have been very little explored. Today I returned from a jaunt in British Columbia — by automobile. There are so many Americans in that Canadian province that the British atmosphere is well impregnated with Yankeeism. I live but 20 miles from the frontier. On the boundary line there is a 'Peace Arch,' and some years ago I was one of a group of the two nationalities who surrounded the arch with a beautiful garden of some acres, visited annually by thousands of tourists, some even from Massachusetts. We have had no snow here this winter, but 60 miles away there is plenty on the mountain meadows. Federal and state governments keep roads open to the mountain lodges, to the delight of those who travel on snowshoes and race on skis."

— ARTHUR T. CHASE, Secretary, Island Creek, Mass.

1888

It was pleasant in March to see that Ned Webster had his usual exhibit in the 77th Spring Flower Show in Boston. As the reporter describes his entry, "A few steps away from the gay and happy profusion of tulips, crocuses and hyacinths, so militant and proud, are glamorous and exotic orchids which form a priceless exhibit. Grown by Edwin S. Webster, they are of all colors, sizes, shapes and personalities and are breathtaking in their fragile loveliness." They won him the first prize for a group of orchids; and he took a second for cinerarias.

The realization that this year will be our 60th anniversary should fill some of us with a determination to be on hand during commencement week at Technology. Our class dinner will be timed for convenient combination with the Alumni Day functions on June 12th. President Webster expects to attend, and Charles Merrell is planning to come up from Florida for it.

This last piece of news was gleaned by Assistant Secretary Thompson, who has been on a six weeks' vacation with Mrs. Thompson, returning about April 1. While there, he wrote that he had already played golf on three different courses and was expecting to play on the "Pelican." So far he likes the Professional Golfers' Association course best. He had been in the water only once, finding it rather cool. Merrell, who lives in his fine home at Dunedin, was taking him to a Technology club dinner in St. Petersburg.

A long letter from Fred Nichols reports the details of his daily progress toward recovery from an automobile accident in which his leg was broken early in October. He has been admitted to the Chicago Presbyterian Home and expects to take up residence there as soon as his condition will permit.

Your Secretary looks forward to his usual summer on Chebeague Island, where his 100-year-old farmhouse is undergoing some remodeling which will make it more com-

fortable. — BERTRAND R. T. COLLINS, Secretary, Chebeague Island, Maine. SANFORD E. THOMPSON, Assistant Secretary, The Thompson and Lichtner Company, Inc., Park Square Building, Boston 16, Mass.

1890

Our good Secretary and his wife are off on a trip to the warm and sunny Southwest and California, having had about all they could stand of this record-breaking winter of cold and snow. George writes they are now in Pasadena and expect to return home sometime in April. Our best wishes for a delightful trip go with them.

The only representatives of the Class who braved the weather and attended the Midwinter Alumni Meeting were, so far as we know, Miss Bragg and Willard Tilson. Miss Bragg is staying in Boston this winter at the Dartmouth, 271 Dartmouth Street. She is well and active as ever, having attended not only the alumni meeting but also, on the same day, that of the Foreign Policy Association; and, for good measure, she visited a friend in Melrose.

The sad news of the sudden death of our classmate Schuyler Hazard on January 8 at Albion, N.Y., has been received. We are indebted to his son, Schuyler Hazard, Jr., '23 for the obituary notice published in the Orleans Republican-American of Albion, N. Y., of which the following is a part: ". . . Schuyler Hazard, 80 years of age, former Mayor of Albion . . . died Thursday, Jan. 8th in the Arnold Gregory Hospital, where he was a patient for only two days. He was stricken when he attempted to remove his car from the snow on Liberty Street.

"Coming to Albion forty years ago as chief engineer and general manager for the Orleans County Quarry Company and Medina Sandstone Company, he served in full charge of operation of eight quarries in this area for almost nine years. He was Albion Mayor from 1915 to 1918.

"Mr. Hazard was born at Georgetown, S.C., on April 19, 1867. . . . He attended Thayer Academy at Braintree, Mass., and was graduated as a civil engineer from. . . Technology in the Class of 1890. He was a life member of the American Society of Civil Engineers and a member of the Engineers Club of New York City. He was engaged in railroad engineering for the Big Four and the New York Central. He was resident engineer for the construction of the Pennsylvania Terminal in New York City and at one time was special assistant to the chief engineer with the Catawba Power Company during the construction of a dam and power house in the Catawba River in South Carolina, and he built the Union Station in Birmingham, Ala.

"Hazard Parkway, in the southern part of the Village of Albion . . . bears the name of the former mayor, who bought the property in 1915, put the street through it, and then gave the street property to the village. Mr. Hazard was one of the incorporators of the Arnold Gregory Hospital and was chairman of the building committee which took over the Ezra T. Coann home in 1912 and converted it into the local hospital.

"Mr. Hazard was married on Feb. 15, 1893, to the former Miss Adelaide Erskine Perry of Rockland, Me., and they would have marked their 55th wedding anniversary next month. He leaves his widow; two daughters, Mrs. E. Earl Harding of Albion and Miss Eloise Perry Hazard of New York City, assistant editor of the Saturday Review of Literature; a son, Schuyler Hazard of Albion; [and] two granddaughters. . . .

His son also adds these further notes on his father's more recent activities: "During World War II, he was in harness again and served on four projects directly bearing on the war effort. In 1940-1941, he was with the engineering firm of Koch and Fowler, in charge of the streets, sewers, and water supply in construction of Camp Bowie, Brownwood, Texas. In 1942, he was with the office of the District Engineer, United States Corps of Engineers, Denison, Texas; then for 20½ months with Charles T. Main, Inc., on construction of the Holston River Ordnance Works, Kingsport, Tenn.; and finally, for 15½ months, with the Kelley Corporation on construction and piping at Oak Ridge, Tenn. Since July, 1945, he had maintained a civil engineering service in Albion, N.Y., and was active to the day he was stricken." This record of service is one of which we of his Class may well be proud. Our deepest sympathy is extended to Mrs. Hazard and members of the family.

Notice has only recently been received from the Alumni Office of the death of Eugene A. Holmes of Pomona, Calif., on May 17, 1947. Holmes was born in Medford, Mass., on July 4, 1869. He registered at Technology in the Department of Mechanical Engineering, although he did not stay to complete the course. His interests changed to the field of law, and after attending the Boston Law School he was admitted in 1895 to the bar in Maine, where he practiced for many years and served as a member of the state legislature. In 1913, he moved to California and continued the practice of law in Los Angeles until 1939, when he retired and took up his residence in Pomona. He leaves his wife, to whom we are indebted for this information and to whom the sincere sympathy of the Class is extended. — GEORGE A. PACKARD, Secretary, Room 514, 53 State Street, Boston 9, Mass. HARRY M. GOODWIN, Assistant Secretary, Room 3-233, M.I.T., Cambridge 39, Mass.

1893

Roy H. Beattie passed away at his home in Tiverton, R.I., on February 21. Except for the first year after graduation, when he was assistant engineer with the New York, Chicago and St. Louis Railroad, Beattie had been in business in Fall River, Mass., specializing in water-front engineering and construction for about 50 years. The Beattie Corporation, of which he was president and treasurer, did a large amount of work in New England, including breakwaters, seawalls, and wharves.

During the first three months of World War I, Beattie was chairman of Local Draft Board No. 6, of Rhode Island. From then until February, 1919, he was assistant manager, wood ship division, United States Shipping Board, Emergency Fleet Corpora-

tion. In recognition of his valuable work in this division, one of the first three ships built by L. H. Shattuck, Inc., at Portsmouth, N.H., and launched on July 4, 1918, was named the *Roy H. Beattie*, and christened by his daughter Helen. During World War II, his company designed many of the naval installations constructed in the Narragansett Bay region.

Beattie took an active interest in public affairs, having held the offices of president of the Town Council, town surveyor, and bridge commissioner for Tiverton. He was a director in the Metacomet National Bank, the Fall River Electric Light Company, and Seacowett Mills. He was a member of the American Society of Civil Engineers, and the Boston Society of Civil Engineers. At the time of our 50th anniversary, he reported that seven clubs had survived his departure from membership, and that his hobbies consisted of farming, shooting, and sailing. He is survived by his wife, Helen Burch, whom he married on December 2, 1896; three sons, Hamilton, Malcolm, and Alan, all of whom have attended the Institute; a daughter, Mrs. Clifton B. Leech of Barrington, R.I., and seven grandchildren.

Clara Amity Bliss, whose death occurred at the Anna Jacques Hospital, Newburyport, Mass., on February 1, became affiliated with the Class of '93 when she first attended the Institute in September, 1890, as a special student, taking courses in chemistry and biology. Miss Bliss was graduated from Mount Holyoke Seminary in 1888 and received the degree of bachelor of science from Mount Holyoke College in 1899. Beginning with the Brattleboro, Vt., high school, her life was devoted to the teaching of chemistry, most of her time, subsequent to 1893, being spent as professor of chemistry at Wells College, Aurora, N.Y., until her retirement as professor emeritus of chemistry. In 1914 and again in 1921, she taught chemistry at Columbia University, where she was awarded her master's degree. For one year during World War I, Miss Bliss was in charge of the relief work done by the faculty and students of Wells College for the American Fund for the French Wounded. She was a member of the American Chemical Society.

Arthur Fred Woltersdorf, who was a member of our Class for three years (1890-1892), studying architecture, died at the Grant Hospital in Chicago, Ill., on March 3. During the year 1892-1893, he traveled and studied architecture in Europe. Since 1894, he had been continuously engaged in the practice of architecture in Chicago. At the time of our 30th reunion, he was associated with William Bernhard, under the firm name of Woltersdorf and Bernhard, and since then had continued in private practice at 520 North Michigan Avenue, Chicago. He was a fellow of the American Institute of Architects and a past president of the Chicago chapter. He was editor of the monthly bulletin published by the Illinois Society of Architects, of which he was also a past president. He was a member of the Chicago Plan Commission advisory board. He was not married.

The New York Times reports the death of Harold Meade Mott-Smith on March 28.

The retired art director of the General Electric Company died in Ellis Hospital at the age of 78. Born in Hawaii, Mr. Mott-Smith attended Technology and later studied art in France. After spending more than a quarter of a century with the General Electric Company, he had retired about 10 years ago. He is survived by three sons, a daughter, and two sisters. — FREDERIC H. KEYES, Secretary, Room 7-211, M.I.T., Cambridge 39, Mass. GEORGE B. GLIDDEN, Assistant Secretary, 551 Tremont Street, Boston 16, Mass.

1896

Classmates may possibly have already read in the March issue of *The Review* the honor which has come to John Rockwell. President Compton has announced that the new field house already under construction on M.I.T. property west of Massachusetts Avenue, adjacent to Vassar Street, will be named for Dr. Rockwell. This is in recognition of John's active interest in athletic affairs since 1898, when he was elected a member of the Advisory Council on Athletics. Thus he has served for more than 50 years on this council, and was its chairman from 1914 until the last of November, when the Advisory Council on Athletics was replaced by the new Athletic Board. William H. McAlpine has received honorary membership in the American Society of Civil Engineers for his work in inland waterways and flood control projects.

A signal honor has also come to your Secretary. On Friday, February 27, there arrived by express prepaid a box of big golden California navel oranges from Charlie Stamp, being his own product in Rancho Santa Fé, Calif. Charlie must possess some mystic power of divination, since how else could he know that the Secretary's favorite breakfast fruit is a plump, ripe, luscious navel orange. Charlie's product is certainly tops. He reported that the unusual drought in California this year had had serious effect on his Valencia crop, which was picked in June and July.

Bugs and frost had further aggravated his difficulties this year. He says when a California farmer has to irrigate in what should be the rainy season he weeps so profusely that he saves on the water bill. However, his sump pump, which, in a previous issue of these notes, had been reported as giving him difficulties, is now working very satisfactorily; the solution proved to be the chrome-treated pump shaft, as well as the precaution to keep the well about one-third full of fresh water.

Lythgoe paid a call on the Secretary on March 4 and reported that the 300 pounds of potatoes which he raised last year were lasting through the winter, with the promise of a surplus to be sold. This, with the present high price of potatoes, should mean a real profit for Lythy. He was also looking forward to the advent of spring in order to get some spring-dug parsnips from his garden. He and Mrs. Lythgoe called again on March 11, which was the date for the meeting of the northeastern section of the American Chemical Society at M.I.T. He was to have the honor of acting as chairman at the symposium.

At the class meeting in New York in February, Dan Bates told about the movement for a Constitutional limitation of 25 per cent on Federal income taxes, and it was a surprise to most of us to learn that already 18 states had passed resolutions on a so-called XXII amendment to limit Federal taxation. Dan has sent the Secretary literature on the subject, and he will be glad to send similar literature to any classmates who are interested. It is rather significant that Federal income taxes began very innocently at two per cent, and no one had any idea at the time that they could ever reach their present high figure.

The last word from Paul Litchfield was to the effect that Mrs. Litchfield had had the misfortune to break her hip, and her full recovery to the point of being able to walk again would be a matter of some time, although she was making good progress. The business affairs of the Goodyear Tire and Rubber Company were less hectic, so that he was taking advantage of the opportunity to spend most of the spring at his Arizona ranch with Mrs. Litchfield.

Through Tom Harvey '28, and also through our classmate Joe Stickney, the Secretary has received word that Wayne has been having a rather extended siege in the Methodist Hospital in Indianapolis, where he was hospitalized to give his heart a rest. Both men stated, however, that the rest cure seemed to be proving most beneficial. For a while friends were not even privileged to call him on the telephone, but Joe said he had finally been able to talk to him and found him in a cheerful mood and much like the old Lloyd Wayne. Joe himself continues the same busy insurance agent, although his ambulation was considerably restricted by the amputation of his leg, but now that he has recently acquired an artificial leg he is getting around more and having an interesting time learning to walk on two legs again.

Word has also come from Burt Rickards '99 in Albany to the effect that Jim Melluish has been hospitalized at the Harbesette Manor convalescent home in Colonie, a suburb of Albany. It will be recalled that Jim was unable to attend the class meeting in New York in February because of poor health.

The Secretary had reported previously the receipt of a letter by President Compton from Mrs. Lindenlaub, widow of our classmate Armin Lindenlaub. The Secretary has now received a letter from her personally telling of Armin's death and the war's effect, and the present tough situation of herself and her widowed daughter and five-year old grandson. She wrote that they especially lacked butter and fat and further, that other things such as sugar, milk, meat and so forth, were in very short supply, and that there were absolutely no eggs. The Secretary has sent a small trial package of food in the name of the Class. If any classmates feel the urge to supplement this class package, shipments weighing up to 20 German pounds can be sent direct by parcel post addressed to Mrs. Hedwig Lindenlaub, Friedrichplatz 3, (10B) Chemnitz (Bundesland Sachsen), Russian Zone, Germany.

Two deaths have been reported: Julius F. Gayler on February 21 and Mark Allen on

March 13. Further details will appear in the next issue.—CHARLES E. LOCKE, Secretary, Room 8-109, M.I.T., Cambridge 39, Mass. JOHN A. ROCKWELL, Assistant Secretary, 24 Garden Street, Cambridge 38, Mass.

1898

Flash! The magical number 98 has been equaled and surpassed! Lester informs us that, as of March 25, 99 classmates have sent in "coming" cards. Names to be added to the lists published in the November, January, and March issues of *THE REVIEW* are as follows: George W. Adams, Henry C. Belcher, Agnes Fraser Boursaud, William L. Butcher, Alfred H. Caspary, Fred B. Cutter, Everett C. Emery, Ray C. Faught, Abram French, Lyman F. Hewins, Charles S. Hurter, John H. Larrabee, Walter H. Lee, Charles LeMoyne, Julius E. Nolte, Edgar W. Norton, Shirley S. Philbrick, Ralph R. Rumery, James W. Shook, Frank A. Spaulding, Dr. Alice W. Tallant, Robert M. Vining, Karl W. Waterson, John F. Wessel.

And listen! In addition to the above, 50 wives are coming and also other relatives, children, and so forth, including some young folk. Perhaps Jack Bleecker will bring his great-grandchild. The Parker House has promised to provide a nursery for babes-in-arms. By the way, if you have not yet sent in your application for accommodations at the Parker House, better get busy. Boston is a great convention city and a favorite center for summer tourists. We don't want to put up tents for you on the Common!

Where were the '98 April class notes? They just weren't. You have heard of the proverbial straw that broke the camel's back. About the time in February when the Secretary would under ordinary circumstances have been preparing the copy for April he had to rest a bit for a couple of weeks. It was nothing more serious than a common cold, and we will promise, if possible, not to do it again.

An amusing situation has arisen. For some time we have been writing, cajoling, and entreating for copy. Lester, with tireless energy, in his letters has asked for material for the class notes. Recently, the Review Office has sent us an abundance of clippings and notes. You have read about, and some have experienced, the 33 snowstorms that overwhelmed Boston and vicinity during the past winter. Cities and towns and householders had no sooner dug themselves out from one storm, when along came another. Well, that's about the way we feel, submerged beneath all this blessed copy. A delightful dilemma! Cards, letters, travelogues, speeches, citations, newspaper articles, replicas, photos, obituaries, and biographical sketches. A regular spring and Easter upsurge of new life. Publicly and heartily we thank Lester, *The Review*, and the classmate writers. In order not to send in enough copy to pre-empt the entire section of *The Review* devoted to class notes, we will present the varied material in a sort of catalogue, reserving the full texts of the more voluminous communications for later publication.

Charlie Hurter sent us a card in January from The Homestead, Hot Springs, Va.:

"We came down here for a couple of months to give my wife a rest. Very fine place to stay. Best wishes to all." Thanks, Charlie, and see you and Mrs. Hurter in June!

You have all received a copy of the Golden Anniversary Directory. It is almost impossible to appreciate the vast amount of work that Lester put into this incredible accomplishment and labor of love. We understand that not infrequently he wrote as many as 40 letters a day! The F.B.I. and Sherlock Holmes and Dr. Watson had nothing on Lester when it comes to ferreting out needed information, ransacking files and records of engineering societies, of the armed services, and of municipalities, studying Alumni Association records, Techniques, Class Books, and popular publications, often following a single tenuous clue to a final triumphant conclusion.

Travelogues: One sent by Fred Gilbert and acknowledged with thanks in the February notes, describes a delightful trip from Helena, Mont., to Tucson, Ariz. Another comes from Alvan Davis of Waterbury, Conn., describing a transcontinental trip by motor through Texas, the Big Bend National Park, Death Valley, and other scenic wonders of the West; six typewritten sheets full of interesting experiences. You make us envious, Alvan. Thanks for the travelogue. You certainly came across in fine style, and we appreciate it!

Arthur Goodrich wrote to Lester from Mesa, Ariz., and we quote in part: "You are right when you say we are lucky to be out of the snow. Temperatures run from about 45 degrees in the morning to 75 in the afternoon. It takes about one gallon of fuel to heat our trailer for a week. No matter how hard we try, we are not able to spend more than 25 dollars a week for regular expenses." That's beating inflation! Look out, Arthur, you may start a mass '98 trek for the Mesa. That low-cost living! By the way, Fred and Alvan must have driven past Mesa. Too bad they did not know that Arthur was near by. Henceforth, ye '98 Gullivers, when you fare forth, stick the Golden Anniversary Directory in your jeans and be neighborly!

Biographical sketches: These sketches reflect the wide variety in the activities of members of the Class since graduation in 1898. Donald N. Alexander, IV, turned to the ministry. He is now living in Springfield, Mass. Cross the continent, and you will find a judge, Everett Nichols Curtis, IX, who turned to the law. Frederick M. Kendall, IV, continues to practice his profession at Framingham Center, Mass. Frank B. Perry, II, carries on as engineer and architect in Providence, R.I. W. R. Strickland, I, has had 18 separate jobs all over the map, since graduation, and is now residing in Detroit, Mich. Karl W. Waterson, VI, telephone executive, has retired and is now living in Summit, N.J. Watch for the full text of the sketches, which will be published in due course.

Obituaries: More about Frederic L. Bishop appears in the Pittsburgh, Pa., Press, supplementing the notices included in the January class notes. From a Chicago paper comes a notice concerning Walter G. Zimmermann; from the Record, Chelsea, Mass.,

notice concerning Winthrop F. Butler. Before the passing of Winthrop Butler, Lester received a letter from him, and we quote in part: "Thank you for your letter of the 12th in regard to the reunion, especially for your personal notation in the margin. . . . I have learned with respect and admiration of the achievements of . . . gifted classmates . . . At present, I am slowly recovering from the effects of some major surgery. If by next June I should feel more like my old self, it would be a pleasure to participate in some of the less strenuous events and to meet my class- and course-mates of long ago." The chemists will remember pleasantly Winthrop Butler, and the mechanicals and many others of the Class will remember genial Walter Zimmermann. We have received a cordial note from Helen Putnam (Mrs. William E.) expressing appreciation for herself and for her son of the obituarial notice concerning Billy Putnam published in the class notes of the December issue of *The Review*.

Newspaper Clippings: Several concern our distinguished classmate, Roger Babson. From the Savannah, Ga., News, we have a lengthy article headed, "Economist Weighs the Future"; from the Standard-Times, New Bedford, Mass., "Babson Noted for Surveys"; from the Oklahoman, Oklahoma City, Okla., "World in Mess, Inflation Cited as Big Danger." These articles add zest to anticipation of the program which Roger and Lester have worked out for the opening day of the Golden Anniversary on Wednesday, June 9, at Babson Park, and which is given in detail in Lester's Letter No. 6 of February 13.

A testimonial dinner was tendered Ralph T. Horton in the Utica Hotel, Utica, N.Y., by associates in honor of his 47½ years of continuous service with the New York Central Railroad. We have a clipping from the Watertown Times, N.Y., describing our classmate's life and career and also a picture from the magazine, *Central Headlight*, taken at the height of the dinner and showing Ralph looking very fit and shaking hands with an official.

Citation: "The President of the United States takes pleasure in presenting the Legion of Merit to Commodore Albert Loring Swasey, United States Naval Reserve, retired for service as set forth in the following citation: 'For exceptionally meritorious conduct in the performance of outstanding services to the Government of the United States as head of the patrol craft section, Shipbuilding Division, Bureau of Ships, from December, 1941, to January, 1945. Discharging his essential duties with skill and initiative, Commodore Swasey planned, co-ordinated, and expedited the design and construction of patrol vessels during the winter and spring of 1942 to provide large numbers of submarine chasers and motor torpedo boats to the forces afloat and thereby met the urgent need for antisubmarine vessels to counter the serious menace of the German U-Boat campaign in the Atlantic.'

"Commodore Swasey's expert engineering judgment, tireless efforts, and superb professional ability were vital factors in combating the enemy's underseas craft and in the successful prosecution of the war, and his unwavering devotion to the fulfillment

of an important task reflects great credit upon himself and the United States Naval Service. For the President, James Forrestal, Secretary of the Navy."

Presentation: Major Lester D. Gardner was presented with the Daniel Guggenheim Medal on Monday evening, January 26. The announcement, last fall, of the award of this medal and press comments will be found in the '98 class notes of the November issue of The Review. Lester was kind enough to send us a replica of the medal and copies of the speech of presentation and of his gracious speech of acceptance. We trust that among the many exhibits that he is preparing for the Golden Anniversary, he will include a replica of the medal and copies of these speeches.

It's great to be so good that after you have been retired your old company has to send for you again. This is what has happened to Frank Colcord, who had hardly more than arrived in California when he was recalled to New York for special work. Congratulations, Frank, and we hope to see you at the Golden in June.

George Cottle, back from Guatemala and Florida, is working with tireless energy and his usual efficiency in co-operation with Lester and George Treat for the great event. He has called a meeting for Tuesday, March 30, of a Boston subcommittee, which includes Elliott Barker, Maurice Delano, Henry Richmond, Joe Riley, and Ernest Russ. Yes, things are rolling. Make every effort to attend the gala occasion. If you cannot come in person, send a greeting to be read at the Golden Class Dinner in the Algonquin Club on Wednesday evening, June 9.

On consulting the program for the Golden Anniversary, which was published in the class notes for January, you will note that one feature is a Boston Symphony Pops Concert on Friday evening, June 11, 1948. We include herewith the program of the concert played on June 11, 1947: Triumphal March from *Aida* (Verdi); Overture to *William Tell* (Rossini); Largo from *Xerxes* (Handel); violin solo by Alfred Krips; Ride of the Valkyries (Wagner); intermission; Second Hungarian Rhapsody (Liszt); Ave Maria (Bach-Gounod); "By the Beautiful Blue Danube" (Strauss); intermission; Victor Herbert Favorites; Song Fest Medley: "Pack Up Your Troubles," "Smiles," "Till We Meet Again," "In the Shade of the Old Apple Tree," "My Wild Irish Rose," "Take Me Out to the Ball Game," "Sweet Adeline," "Put On Your Old Gray Bonnet," "There Is a Tavern in the Town," "Stein Song," "Let Me Call You Sweetheart," "Semper Fidelis." Arthur Fiedler, the conductor, is very sympathetic to the wishes of his audiences. Write us if you would like this same program, and we will see what can be done about it. He is also generous with encores, so if you would like some special favorite played, write also about this, soon!

This is election year in the nation. We should be in style and hold a class election in June. There has never been an opportunity like this since the Class was graduated. Just think! More than half the Class coming to the Golden, as well as wives and children. We should be able to draw up a

constitution, hold an election, and plan for the next 50 years. — EDWARD S. CHAPIN, Secretary, 463 Commercial Street, Boston 13, Mass.

1899

For the last 15 years Harry A. F. Campbell has been plant engineer at Brockton, Mass., for the George E. Keith Shoe Manufacturing Company, makers of the Walk-Over Shoe. Harry's hobby, however, is locomotives, and he was fortunate enough to be able to combine his hobby with his profession for a long time. For 30 years he was in the engineering and sales department of the Baldwin Locomotive Works in Philadelphia, where he designed many locomotives, both steam and electric, and took part in testing them out. That he pursued this line is not to be wondered at since his thesis for graduation was based on a locomotive test. From 1915 to 1920, Harry was located in Paris, France, for the Baldwin Company, acting as liaison between the English, French, and American armies and their railways. As a curious coincidence for one in this line of work, a sister and two uncles were killed in railroad accidents.

In the March issue of The Review, in the list of deaths, is the name of Frederic Tappan of Vancouver, B.C., with the notation that he died on July 25. Having no further facts, your Secretary wrote to the Vancouver address and received a reply from the executor of the estate, who is Frederic's nephew.

Frederic's first job was with the New York Telephone Company, exact location unknown. Later, he went to the Pacific Coast, where he was employed as a draftsman on public utility works. While thus engaged, he took a correspondence course in accounting and was graduated with the second highest honors ever attained in that course up to that date. In 1910, Frederic went to Canada, where he became connected with the British Columbia Electric Railway Company and established residence in North Vancouver, where he resided until his death in 1947. His wife outlived him by only seven months until February. Frederic's nephew says of him: "His reputation as power recording clerk was proverbial, and despite a somewhat eccentric disposition, he proved himself indispensable until his retirement in 1941. His understudy reported, after his retirement, that a whole staff moved into his office to carry on what he had accomplished alone. He was the most methodical man I have ever met and so regular was he at his dinner table at the Hotel Vancouver that, on the one occasion when his system failed him and he neglected to advise the management in advance of his being entertained at a friend's, the police were informed and a search instituted for him. He was very, very reserved and spent his leisure hours doing intricate mathematical calculations in his room, alone. From his retirement in 1941, he had acted as honorary purchasing agent for the 'Trading Bureau' in North Vancouver, and in no time at all he had the heating repair business at his fingertips. He left behind him diaries of every single item he purchased." — BURT R. RICKARDS, Secretary, 381 State Street, Albany, N.Y. ARTHUR H. BROWN, Assistant Secretary, 53 State Street, Boston 9, Mass.

1900

Your Class Secretary, having endured the cold of New England and shoveled snow most of the winter, finally escaped from the rigor of the season about the middle of February and headed for the South to meet his brother-in-law, Arthur Wallon '04, from Seattle, for a grand tour of Florida. He landed in New Orleans just in time for the second largest daily rainfall in history. The resulting flood blocked the highways, came up in the cabin where he was spending the night until the floor was almost covered and made him wade in a foot of water to reach his car next morning. No harm resulted, however, and it was an interesting experience.

In New Orleans we called on John Porter, XI, and George Pigman, VI. Porter came to New Orleans soon after graduation in 1900 and has lived there ever since. For many years he was with the municipality assisting in the development of the water and sewage systems, which present particularly difficult and interesting problems in New Orleans as the city is, for the most part, below the level of the river and all drainage must be pumped over the levees. Later on, Porter became interested in the problem of malaria control throughout the state. He is now associated with the state board of health in this work. He has five children — two sons and three daughters — and seven grandchildren. He and Mrs. Porter are planning to attend our 50th reunion year after next.

Pigman left the Institute before graduation as he had received a presidential appointment to the Navy. He went into the Service of Supplies and remained with the Navy for about 25 years, advancing to the rank of commander before he resigned. After leaving the Navy, he went to New Orleans, his wife's native city, and engaged in business there. During World War II, he returned to the Navy as a civilian and rendered service in the supply department at New Orleans. Mr. and Mrs. Pigman have two sons. The elder, who was with the Navy in a destroyer during the war, has recently received his law degree and entered practice in New Orleans. The younger son, a Navy fighter pilot, won great distinction in the Pacific during the war and is now completing his education at Tulane University in the field of commerce.

Coming down to the vicinity of Tampa, we found Arville C. Redman, I, at Safety Harbor. He has retired and come to Florida to live. In St. Petersburg we called on Lewis H. Bullard, III. In Bradenton we called on Mrs. Milton W. Hall and learned that Milton died on March 26, 1945. For some reason this information had not reached the Alumni files. We had hoped to find Arthur Walworth at Bradenton Beach but calling at his home there we found that he had gone North a few weeks before. We had a pleasant call with his son, however. This completes the list of 1900 men so far as we have journeyed. We hope that Joe Draper will still be in Palm Beach when we get there. We hear that Fred Lawley is looking up classmates in California. Charles Bacon reports having had a very nice call from him.

The Alumni Office reports the death of Howard P. Wise on February 21. A brief notice in the Malden News runs as follows:

"Howard P. Wise, member of one of Malden's oldest and most prominent families died after a brief illness in his 72d year. He was born in Malden, — graduated from Malden High in 1896 and then attended M.I.T. [For two years in Course I. — E.G.A.] He was formerly well known as a bowler at the Kenwood Club and played golf at the Bellevue Club in Melrose. For 45 years he was associated with the Old Colony Trust Co. and the First National Bank of Boston." — ELBERT G. ALLEN, Secretary, 54 Bonad Road, West Newton 65, Mass.

1902

The Class will be interested in a clipping taken from the Boston Record of October 1 which concerns the services of Jim Mahar, who was retired from service of the City of Boston on September 1, with the honorary title of engineer emeritus. Mr. White, for the school committee, presented the following account: "On August 31, 1947, Mr. James J. Mahar, Engineer in the School Department, was retired after forty-five years of service in the City of Boston. In November, 1902 [after] graduation from . . . Technology, he entered the employ of the Schoolhouse Department and in the ensuing years worked in all branches, including engineering and architectural departments.

"In 1919 he was appointed Schoolhouse Commissioner, in which position he served until 1925, when he was appointed Engineer in the Office of the Business Manager. He continued in this capacity until 1929, when [he] was assigned as technical advisor to the Superintendent of Schools in all matters relating to the upkeep of the school plant and to new construction. In 1938 he was granted leave of absence from his position as Engineer in the School Department and was elected by the Board of Commissioners of School Buildings as Superintendent of Construction in the Department of School Buildings, which position he occupied until 1946. During his services as Superintendent of Construction he reorganized the work of the Department of School Buildings and without reducing salaries or discharging personnel, effected reductions in expenses of approximately \$2,500,000.

"Throughout his long and honorable career he has given faithful devoted service. The Boston School Committee is deeply appreciative of this service, marked as it has been by the highest personal and professional standards. On the retirement of Mr. Mahar, a career man in the City of Boston, the School Committee extends its sincere wishes for years of health and happiness so richly deserved by a faithful loyal worker in the interests of the Boston Public Schools."

A letter from LeRoy Brainerd states that, although his health is not very good, he is still manager of the Middletown office of the Connecticut state employment service. He would like to have any classmate going through call on him. — Dan Patch is still in Hawaii but finds time to write that his fourth grandchild, Susan Elizabeth Patch, 10 pounds, arrived on February 20. — BURTON G. PHILBRICK, Secretary, 246 Stuart Street, Boston 16, Mass.

1904

At last our appeals for news items have brought a response. Henry Richardson has come through with just what we are looking for. We quote as follows from his letter: "I was glad to see some 1904 notes in the March Review. Here are a few notes to help the cause along. Roy Mailey, VIIIs, is retired from General Electric, Nela Park, Cleveland, and is now on Salem Street, Andover, Mass., taking it easy after a serious illness. Bob Phinney, VI, came down from Rochester, N.Y., where he is still with the Signal Company, and we had quite a chat in one of the New York City hotels. Bob is starting a new family — only a few years old now. He spent several months of the past year in China on signal work. I saw Guy Palmer, I, sometime back in Chicago, where I dropped in to see him while on vacation with my son at Michigan City, Ind. He is with the Baltimore and Ohio Railroad and has nearly 45 years with them to his pension credit — which he does not have to take up until his 70th year of age. I spent several hours with Karl Peiler, VI, at the American Ceramic Society meeting in Atlantic City last April. We were the oldsters at the M.I.T. luncheon. He is with the Hartford Empire Company at Hartford, Conn. Miller, VI, is also with them. We three — Peiler, Miller, H.K.R. — and Bob Sosman, VIIIs, all are members of the Ceramic Society. Eliot Niles, VIIIs, is retired from the Bell Telephone Laboratories and is living quietly in Bloomfield, N.J. Yours truly, after a strenuous war job of trouble shooting, is now on the advisory engineering staff at Westinghouse in Bloomfield."

Fred Anderson has been heard from, having taken time off from fishing at Fort Lauderdale, Fla., to send for some M.I.T. windshield stickers. We don't know whether they are for his car or his motorboat; but if you are in his neighborhood, you might look for both. — Shorty Holbrook, who was officially supposed to retire as dean of engineering at the University of Pittsburgh last June, was instead given an honorary doctor of science degree and asked to remain for an extra year.

Melvin Schwartz, who began his career with Wellington Sears and Company after his graduation and rose to be manager of the Chicago division, retired on February 1. He plans to keep busy by devoting time to assisting the work of the Central Baptist Children's Home in Maywood, Ill. — Bob Sosman has made the headlines by giving the annual Howe Memorial lecture before the American Institute of Mining and Metallurgical Engineers at their New York meeting in February. His subject was "Temperatures in the Open-Hearth Furnace." Only men of the highest distinction are asked to give this lecture.

We are indebted to Charlie Haynes for further information regarding the career of Joe Finnegan, whose death was reported some time ago. He had been connected with the Armour Institute of Technology, which later became the Illinois Institute of Technology, and before his retirement was head of the department of fire protection for many years. He was a well-known figure in that field and highly regarded by the insur-

ance companies. In reporting the death of Professor Finnegan, the Technometer, the Illinois Tech alumni organ, states regarding him: "In Professor Finnegan the students found a loyal and helpful friend: they learned to appreciate him as a sincere and constructive critic. A staunch idealist, he labored painstakingly to develop through them the tools they could utilize for their own culture."

Up to the time these notes are written, there has been a profound silence regarding the suggestion in the March notes that those desiring a June outing make their wishes known. Well, at least let's get a fair turnout on Alumni Day and at the annual dinner. — EUGENE H. RUSSELL, JR., 82 Devonshire Street, Boston, Mass. CARLE R. HAYWARD, Room 8-109, Cambridge 39, Mass.

1905

Omission of notes in the April issue was due to the Secretary's trip to Texas to see that favorite (and only) grandson. Incidentally, it produced some class news. When you can't induce '05 men to write about themselves, you have to dig them out. In Auburn, Ala., we dug Jim Barnes out of a classroom and had lunch with him. Professor Barnes is now teaching illuminating engineering and industrial management at the Alabama Polytechnic Institute. It's a long story, but after leaving the street railway business many years ago, Jim had several experiences (all successful, apparently) in various lines, including commercial refrigeration, but finally decided on semiretirement to raise chickens, turkeys, and so forth. In seeking the advice of the agricultural department at A.P.I., he was persuaded to buy a farm not far from the college grounds. Apparently he had given his consultants a bit of his history while seeking their advice, for on the following day the dean of the college called Jim up and asked for an appointment. It resulted in Jim's accepting a position as above, and his classroom experience sounds much like Ros Davis' when he was "called" to teach descriptive geometry at Wesleyan. If you ever get such a call, apparently the secret is to keep half a jump ahead of the students. Ros's reaction when learning about Jim's new job was "I'd like to see what Jim knows about fluorescent lighting. I'll put my descrip against his industrial management any time." Jim says he was never happier in his work in his life; incidentally, he is planning to raise laboratory animals and grow a new type of Christmas tree. I expected to find Jim a great-grandfather (at least) but our Class Boy, now 41, has one young son.

In New Orleans it was aggravating to be able to talk only on the telephone with Bob Cutting, II; our schedule allowed but a few hours there. We did see the French Quarter and enjoyed some good food, but could not stop to accept Bob's invitation to visit him. He has apparently been employed on flood control for the past 20-odd years. In Houston, Texas, it was again exasperating not to be able to run up to San Antonio (200 miles) to see Willard Simpson, or to Fort Worth (250 miles) to see Bill Spaulding. We had had good intentions at the beginning of the trip, but a strenuous program of

driving 400 miles a day going south had taken much of the fun out of driving, and it just wasn't possible.

In Little Rock, Ark., I fully expected to see Walter Whittemore and did talk with Mrs. Whittemore, only to find that Walt had been transferred to the United States District Engineer's Chicago office last May and apparently was to be there permanently. Walt had a bad heart attack a few years ago, and apparently his working is contrary to orders, but Mrs. Whittemore thinks he has responded well. They have two daughters, one being in Tennessee, another in Houston, Texas. A son is a doctor with a brilliant war record, now engaged in surgery research at the University of Tennessee. This concluded the news gathering for the trip, which was just as strenuous returning as going.

In Boston, early in February, I saw Carroll Curtis, IX. He, too, had practically retired three years ago but was prevailed upon to take the position of personnel manager at the Burrowes Corporation in Portland, Maine, which he states he is enjoying very much. Carroll's address is the Falmouth Hotel, Portland, Maine; he summers at Peaks Island, Maine. Philip E. Hinkley, II, retired in February from the S. D. Warren Company after nearly 43 years of uninterrupted service. Phil's address is now 37 Ship Channel Road, South Portland, Maine. Bob McLean, II, announces his retirement from his position as general manager of the United Shank and Findings Company of Whitman, Mass., as of October, 1947. Bob insists this is to be semiretirement; so if you have any part-time jobs, see Bob—address 91 Bedford Street, Bridgewater, Mass. His specialties are cribbage, shanks and gins (cotton).

H. Hoffman Kennedy, who hopes someone in Course IV will remember him, writes from his home, 26 East 35th Street, New York City: "An abominable health cramps my style; witness, an operation for the summer of 1946; and for the summer of 1947, six weeks in bed with heart trouble and a slow convalescence; since then, half speed. I have been unable to return to Paris since the war, primarily because I have no place to live, having given up my place on the Avenue Henri Martin, and the house in the country having been badly damaged and emptied by the successive armies that have occupied it. There are rooms above my shop but no bath and no heat, and I fear the strain of bathing in the kitchen sink, and the clammy cold. Apartments seem as difficult to find in Paris as in New York. Then, too, one must contend with the uncertainty of obtaining medicines when needed. Food seems plentiful if you can pay the prices, which are higher than in New York; but the food, I believe, is good. Troubles loom ahead, as workmen and employees as well as *rentiers* can't pay black market prices. Hunger, as you know, is a bad counselor, and the recent devaluation does not seem to have remedied anything. Let's hope the European Recovery Program will help, but I fear it won't if pressure groups in Congress should put over rises in customs duties as they tried to do last year. Of course lower duties, which both parties shy away from as from

a pest, are not to be hoped for." — Hub Kenway was elected president of the Boston Patent Law Association in November.

Ed Lorenz, II, is just finishing 25 years with the Hartford-Empire Company in Hartford, Conn., manufacturers of glass-working machinery. He has one son, Edward N. (Dartmouth, A.B., '38, Harvard, A.M., '40, M.I.T., S.M., '43), in February completing graduate work here in Meteorology and married to Jane Loban of Kansas City on February 28, who will do research work at M.I.T., and one daughter, Margaret, with one granddaughter, Christine Clark, now four. Listen to this from our old mile runner: "My chief hobbies are mountain climbing and golf, but the old legs are going out. The doctors say I ran on them too much in college days." But they brought in the blue ribbons, Ed. John Damon, VI, whom we reported in the January issue as being in Japan getting reparations data for the United States Government, is back in Boston with the Jackson-Moreland Company. His address is 27 Whitney Road, Newtonville, Mass.

The Boston Herald of January 25 carried a story of the 100th anniversary of D. Lovejoy and Son, Inc., of Lowell, Mass., also a mighty good picture of Roy, another member of Course IX. Roy entered the company's employ in 1907. In 1917, the active management was turned over to him, and he is now president and general manager. This quotation from the Herald is indicative of Roy's success: "Occasionally an oak tree has sprung up in rocky soil scores of years ago and today, 100 years later, with its broad branches and deep roots is still growing stronger than ever." The Lovejoy Company manufactures a great variety of machine knives. They operate a large factory also in Anderson, Ind., and maintain sales offices in New Orleans and New York City. Come to the next class reunion and hear Roy's thrilling description of what some people might call a rather drab business. This reunion (our 43d) will take place at East Bay Lodge, Osterville, Mass., on June 18, 19, and 20. Plan now to be there.

Ralph E. Tarbett, XI, died on January 23 at the Marine Hospital, Baltimore, Md., after a heart attack. Ralph entered the United States Public Health Service in 1913 and was stationed at the stream pollution investigation station in Cincinnati from 1913 to 1917. During World War I, he was the health service officer in charge of the sanitation of civilian areas around Army camps. From 1922 to 1925, he had charge of sanitation along the United States-Mexican border and was also health officer at El Paso. He was called to Washington, D.C., in 1928 as chief of the newly created sanitation section of the health service. During World War II, he was chief sanitary engineer of the Office of Civilian Defense and later went to Japan to report on health conditions caused by the atomic bombs. He retired in January, 1946, after directing the environmental sanitation features of the Public Health Survey of Chicago and Cooke County, Ill. Surviving are his widow, a daughter, four sons and 11 grandchildren.

Philip G. Darling, II, died at Stratford, Conn., on February 16. Phil was with Man-

ning, Maxwell and Moore for five years after graduation and, according to Carl Graesser, contributed much to the development of semitechnical products like safety valves. Later, he was with the Du Pont Company at Wilmington, Del. He left a wife and one son. — FRED W. GOLDFTHWAIT, Secretary, 274 Franklin Street, Boston 10, Mass. SIDNEY T. STRICKLAND, Assistant Secretary, 69 Newbury Street, Boston 16, Mass.

1907

I quote below from a letter recently received from Walter B. Kirby, who has a private practice in architecture with his office at 28 Elm Street, New Canaan, Conn.: "Some of my friends who devour Pepperidge bread with gusto, may be interested to know that I have just completed the designing and supervision of construction of a new industrial plant for the Pepperidge Farm Company, in which they will double their production. You will now be able to let out your belts and buy an additional loaf. The building is U-shaped, the front section being 300 by 80 feet and the two rear wings 125 by 60. The ingredients enter at the tip end of the right rear wing, and at the end of the 550-foot flow line the golden crispy loaves emerge wrapped, packed, and sealed, aboard the trucks. Those who are familiar with the world-wide product of the A. H. Emery Company, makers of the exacting instruments for testing machines, may like to learn that I am designing a new plant for their expansion and development. As you like to receive news of your classmates, I may add that I am president of the Silvermine Corporation, which is constructing several fine residences in Silvermine, Conn. I am vice-president of the New Canaan Development Company and a director of the New Canaan Fuel and Lumber Company as well as appraiser for the New Canaan Savings Bank. My wife and I still live in New Canaan, where we have been for the past 19 years."

Henry Martin wrote me on March 10 saying that last November he completed the work in which he was engaged under the G.I. Veterans Program at Chestertown, Md., for the Federal Works Agency, Bureau of Community Facilities, and returned to Washington. He is now attached to the office of the Chief of Engineers and is engaged in some kind of research work in western Maryland. Henry's home address is 39-41 Langley Court, Washington 16, D.C. — In a letter received early in February, John Frank told me that Sam Marx and his wife were about to leave Chicago on a two months' flying trip in which they planned to cover all of South America. John also wrote me on March 12 saying that he and his wife were to leave Chicago on March 14 for an air trip to Guatemala. John would like to secure a good copy of our senior class portfolio. If you have a copy that you would be willing to present or sell to him, please write him directly at 2850 North Crawford Avenue, Chicago 41, Ill.

Arthur H. Jansson is now living at 85-10 34th Avenue, Jackson Heights, Long Island, N.Y. Ever since leaving the Institute, Arthur has practiced as a naval architect with his office at 30 Church Street, New York City, but I have not heard from him for

many years and do not know whether he is still in active professional work or not.—Not long ago I received word of the death on February 8, 1947, of James J. Mahler, who was associated with our Class in Course VI. In 1942, Mahler was a deputy assessor for the county of San Diego in San Diego, Calif., but I have never heard from him directly since 1907.—BRYANT NICHOLS, Secretary, 23 Leland Road, Whitinsville, Mass. HAROLD S. WONSON, Assistant Secretary, Commonwealth Shoe and Leather Company, Whitman, Mass.

1908

Our 40th reunion will be held at Oyster Harbors Club, Osterville, Mass., from Wednesday, June 9, to Friday, June 11. We plan to arrive at the Club on Wednesday afternoon and to leave after lunch on Friday. Our banquet will be held on Thursday evening. By leaving on Friday afternoon we shall be back in Boston in time to take in Alumni Day at Cambridge and the Alumni Banquet in Boston on Saturday night.

We are sorry to report the death of Mark E. Kelley, which occurred on February 2. He had been active as a contractor and civil engineer in Peabody, Mass., for more than 30 years. We also regret to report the death of Rufus W. G. Wint, prominent Catawissa, Pa., banker and industrialist, which occurred on February 27. The sympathy of the Class is extended to the families of these classmates.—H. LESTON CARTER, Secretary, 60 Batterymarch, Boston 10, Mass.

1909

We secretaries are able to report distinct progress in the two class ventures that have been developing for a year or so, the 40th reunion and the class fund. Over the week end of February 29, Marian and Reg Jones, VI, were here in Boston, and the Review Secretary had the pleasure of a visit from them. Reg came primarily to meet with the Visiting Committee of the Electrical Engineering Department of the Institute, of which he is a member. On Monday he was scheduled to discuss class affairs with the Review Secretary, Henry Spencer, II, and Art Shaw, I, at luncheon at the Harvard Faculty Club. Henry and Art are the Boston members of the reunion committee. On account of an indisposition, Art was unable to be present but we obtained his opinions over the telephone. Alumni Day in '49 will probably be on June 11. It seemed inadvisable to combine the reunion with that event, since the removal of Saturday from the week end would leave essentially no time for a rendezvous of the Class at some hostelry, even if located near Boston. Hence the time has definitely been set for Saturday, June 4. Remember the date. It is felt that should classmates feel unable to go to both events, Alumni Day comes every year. Henry and Art are now busy investigating the different resorts which may be available and will probably report in the June Review. The good work of the committee continued two days later in New York, on Wednesday, when Paul, V, Molly, XI, Harry Whitaker, VI, and the Review Secretary assembled in Reg's office in the Bell Telephone Labs for one of those cozy luncheons that Reg pro-

vides right in his office. It was there decided that the reunion and the efforts to increase the class fund should go along together, Molly taking general charge of this latter. Hence, the reunion committee, the fund committee, and the literature will all combine to foster both events. Molly reported that B. Edwin Hutchinson, III, Vice-president of Chrysler, and Senator Desmond, I, had both agreed to put their shoulders to the wheel, and reports are that these latter two gentlemen met later with Reg and Molly to discuss plans of procedure. In any event, matters are developing, and your committees are soon to select key classmates in several of the city centers to help promote these two projects in their own territory.

Henry Spencer reports the birth on March 19 of a third grandchild, John Kendall Spencer, son of Kendall '43. His daughter, Janet Spencer Willis, who lives in Washington, is mother of the other two.

We are pleased that Cliff Carter, VI, after some importuning, has made a report for class notes. Cliff had intended to report some time ago but became temporarily incapacitated by overexertion while moving into his new quarters at the Kennedy-Warren Apartments on Connecticut Avenue, Washington. The report, addressed to Paul, runs in part as follows: "On July 31, 1940, I was retired for age by operation of law (64, believe it or not), as colonel, United States Army, and as professor of natural and experimental philosophy, in which capacity I had served as head of that department since 1917 and as senior member of the teaching staff (faculty) since 1931 to that date. My intention was to enjoy a much-desired if not well-earned rest in travel, to avoid the sheriff and also any semblance of real work on the 'rock pile' or otherwise. In this I was reasonably successful until December 11, 1941, four days after the Pearl Harbor incident, when Mrs. Carter and I shoved off for the Roosevelt Hotel, Hollywood, Calif., when I took up real work as special assistant to the president of Aircraft Industries, Inc., Curtiss-Wright Technical Institute, Cal-Aero Academy, Polaris Flight Academy, Mira Loma Flight Academy, and several other similar organizations—most interesting activities devoted to the training of Army aviation personnel and to keeping the sun obscured by airplanes in flight. By April, 1943, I was worn to a frazzle, resigned, and returned to our home in Washington, where I have remained in seductive and complete retirement, somewhat surrounded by Mrs. Carter and the families of our two sons and also by our two sons when they were in this country. They have their separate homes, but we have been able to see much of them. Both are graduates of the United States Military Academy, one in 1926 and the other in 1931. One is now a colonel and adjutant general of the First Corps in Japan and the other is a brigadier general and special assistant to the Secretary of State. My younger son, Marshall, is also a master of science, M.I.T., '36. To date we have accumulated three grandchildren—a girl nine, a boy eight, and another girl nearing three. Life has treated Mrs. Carter and me most generously, and we are now at peace with the world, full of gratitude and thanks for good

health, our friends, and all else that has been bestowed upon us by a kindly providence."

Paul has received the following letter from Bedrich Hettick '43. About 10 years ago Paul was his honorary secretary when he applied for admission to the Institute. He is in the Army and has been working on chemical manufacturing plants in Japan. To us his personal experiences in Japan and the conditions which he finds there seem most interesting. "I have been busier," he says, "than a whole pack of eager beavers. I finally resigned. Reason—termination of contract. I now have in hand my travel authority for return to the Zone of the Interior, or the good old U.S.A. I am now merely waiting for port call, being meanwhile busily engaged in adding the finishing touches to my work: hashing and slashing through my files, setting them up so that anybody and everybody can easily absorb the information, preparing a comprehensive report on the whole synthetic fertilizer industry in Japan as it exists today, and preparing a report which justifies the immediate introduction of the urea synthesis process into this country. With these as major items, I am continuously bothered with hundreds of lesser items that keep cropping up all the time. I am going all day long and half the night too, from 7:00 A.M. to 2:00 A.M.

"These Japanese are most amazing people. It would be too difficult to try to explain myself here. Their characteristics are many, good and bad alike; a student of psychology would go goofy. I am glad I am not such a student; I am goofy already. I have made many very good friends amongst these people; some of these friendships will probably last throughout my life. Life in Japan could be happy, interesting, and profitable. Perhaps I may find myself right back here again, but this would only be as a representative of an American firm or through the backing of American dollars.

"There are many mountains in Japan. Mount Fuji, or Fujisan as the Japanese call it, is one of the most famous. Once upon a time I was quite eager to climb this masterpiece of nature, but now I am satisfied just to look at it. It towers 3,700 meters plus out of Surugawa-wan (bay), about 80 miles from Tokyo. On clear days it is easily visible from that famous and unfortunate metropolis. I have seen this mountain in the moonlight with the snow glistening back at the twinkling stars. No words can describe it—immense, stupendous, beautiful, awesome, fearsome, and a host of others all combined. Then there are the Japanese Alps, a chain of mountains forming the backbone of Japan with Mount Fuji more or less at the southernmost end of the north-south chain and the easternmost end of the east-west chain. These chains are not all the so-called Alps. Usually one refers to the mountains in Nagano Prefecture as the Japanese Alps. Nagano is a broad valley enclosed on practically all sides by tremendous walls of mountains some of which I have climbed. This was a year ago May, and even in that month there are still six feet of snow on the tops. All this snow makes a great reservoir of electrical energy for three or four months. I climbed these mountains with a French boy who did not understand a word of Eng-

lish. Fortunately for me, I still knew enough of my high-school French to get along — surprising myself considerably." — PAUL M. WISWALL, Secretary, 90 Hillside Avenue, Glen Ridge, N.J. CHESTER L. DAWES, Review Secretary, Pierce Hall, Harvard University, Cambridge 38, Mass. Assistant Secretaries: MAURICE R. SCHARFF, 285 Madison Avenue, New York 17, N.Y.; GEORGE E. WALLIS, 1606 Hinman Avenue, Evanston, Ill.

1911

"The idea behind a flower arrangement is what counts," said John Taylor Arms, IV, etcher and authority on flower arrangements' when members and guests of the Longfellow Garden Club heard him lecture on "Line and Design in Floral Arrangement" on Feb. 26 in the Eastland Hotel at Portland, Maine. "A creation fails," he told them, "unless it arouses some emotion. We cannot make a design simply by learning a set of rules. . . . Don't worry about winning blue ribbons — there's no way of measuring beauty. Blue ribbon awards change as the group judging your arrangements changes. . . . To have a perfect design you must have three things: well-established linear structure, balance and a beautiful silhouette."

It was my good fortune to be in Cornish, Maine, with my two sons and their families over the Washington's Birthday week end, and I read with interest the advance story of John's visit in the Portland Telegram. Dr. Arms, it stated, is the author of *Design in Flower Arrangement, Churches of France, and Hill Towns and Cities of Northern Italy*. Maintaining his home at Greenfield Hill, Fairfield, Conn., he is president of the Society of American Etchers, and a member of the National Academy of Design and the National Institute of Arts and Letters. Dr. Arms is also an associate of the Royal Society of Painter-Etchers and Engravers of England and *La Société Des Beaux Arts of France*, and belongs to countless art associations in this country. France has awarded him the Legion of Honor in recognition of his drawings and etchings of her cathedrals and churches.

You'll remember that last month announcement was made of President Truman's having presented a Certificate of Merit to I. W. Wilson, XIV, "for increasing the output of aluminum during World War II." In mid-March, I received a fine letter from Bunnie acknowledging my congratulations thus: "I appreciate very much finding your note on my desk on my return from a most enjoyable voyage though the West Indies and to the north coast of South America. It was a rather novel experience for any of us to receive a favorable comment from the Washington administration and of course was much appreciated. I am sure you will realize, however, that the award is to our organization as a whole and in my name merely because I had been privileged to speak and act on behalf of the Alcoa organization in most of the Washington programming. I should like to think that I could get up to the Institute for Alumni Day this year (June 12) and, as usual, will try to do so. I must admit, however, that I think the probabilities are not very great. I am cer-

tainly looking forward with impatience to sitting down again with you and the other classmates for a real session of reminiscing and, if necessary, grousing." Do your best to get here in June, Bunnie!

Another eagle eye has developed — this time it's C. H. S. Merrill, I, who spotted in the March issue of the Boston and Maine Railroad Magazine, under the Portland Division news of "The B. & M. Family," the following item: "Samuel H. Scribner [I], assistant engineer in our Maintenance of Way Department at Dover, N.H., has had to be absent from duty since Jan. 11, his duties being taken over temporarily by Harry P. Douglass. 'Sam,' as the boys all know him, has not been in the best of health for some time." Commenting thereon, Fat adds: "I have always envied Sam Scribner and Paul Pearson, II, who had the fortitude to stick with their love — railroading. I quit it after my apprenticeship was completed but have not been really happy since that desertion. Dieselization of the roads is softening my conscience about my marital infidelity (to railroads)."

During the first two weeks of March (thus dodging a humdinger of a snowstorm up here in his native Gardner) Stan Hartshorn, X, and his wife, Julia, enjoyed a Caribbean cruise to South America on the Grace Lines' Santa Paula. Sailing from New York, they visited the ports and cities of Curaçao, Netherlands West Indies; La Guaira, Caracas and Puerto Cabello, Venezuela, and Cartagena, Colombia. Stan came back brown as a berry and looking really rested after his first two-week vacation for more than a dozen years.

Don't forget that Alumni Fund IX has just started. — ORVILLE B. DENISON, Secretary, Chamber of Commerce, Gardner, Mass. JOHN A. HERLIHY, Assistant Secretary, 588 Riverside Avenue, Medford 55, Mass.

1912

A postal card from N. T. McNeil, I, of 6 Naples Road, Salem, Mass., comments on the vast improvements in 1912 class notes. We appreciate the good word and ask that more of you write in to furnish us with news.

We deeply regret to announce the death of Robert L. Devine, IV, who passed away at the Massachusetts General Hospital on February 20 from a severe heart attack. Devine had served in the Army during World War I and entered the service of the Massachusetts Registry of Motor Vehicles in 1919. He had worked up in the department and at his death was counsel to the registrar. During World War II, he had served with the Massachusetts State Guard, retiring in 1946 as a colonel. He leaves his wife, Mrs. A. Devine, and a son, R. L. Devine, Jr., a veteran of World War II.

Pete Whittlesey passed away suddenly in Wilmington, Del., on February 25. Pete had not been well for several months, but his passing came very unexpectedly.

Clarence McDonough, I, writes that he has recovered from a broken leg which was improperly set in the West Indies and required long hospitalization on his return to the States. — Word has just reached us of the death of Marian Whipple Keith, wife

of Jerry Keith, at Gainesville, Fla., on March 14. Jerry now rates as Professor Gerald Marcy Keith, Box 2695, University Station, Gainesville, Fla. — FREDERICK J. SHEPARD, JR., Secretary, 31 Chestnut Street, Boston, Mass. LESTER M. WHITE, Assistant Secretary, 4520 Lewiston Road, Niagara Falls, N.Y.

1914

A few of our classmates have been sensible enough to settle down to the life of a local squire, and from time to time their activities have been covered in these notes. Roy Hardy of Andover, Mass., is another who can well qualify. After an active career in technical sales work, Roy settled down in his native town of Andover and devoted himself largely to public service. He has served as selectman and assessor for the past 12 years, having just been re-elected for another three-year term, and has served as chairman since 1941. Roy is also chairman of the local Red Cross chapter, and for diversification he is busy bowling whenever the time permits. Just to make this hobby official, he is president of the Massachusetts Bowling Association and serves on the national bowling council. Many other local services would appear to have taken much of Hardy's spare time. They include being chairman of the Community Chest Drive, bank director, past president of the Lawrence Kiwanis club, and church treasurer, as well as an officer in county associations. Of the three Hardy daughters, the eldest is married, and Roy hopes that he, too, may soon join the 1914 grandfathers. The youngest daughter is a sophomore at Middebury College.

In reply to the notices Charlie Fiske has sent out for the class dinner to be held in New York on March 23, several bits of class news have turned up. Seymour Spitz notes that his son, Seymour, Jr., was married on February 7 to Elizabeth Taylor of Murfreesboro, Tenn. — Jim Reber has escaped the severe upper New York State winter weather by spending the winter in Miami — this on top of a West Coast trip last summer. Again, some classmates are sensible.

Clarence Smith, formerly factory manager for the Kerite Company of Seymour, Conn., is now director of purchases and materials under a new plan of consolidating all purchases at the factory instead of in New York. The Kerite Company are wire and cable manufacturers of long standing. — Frank Somerby continues to be active in secondary school education in New York and is serving on several of the co-ordinating committees. He also finds time to continue his religious work with the Riverside Church, where he is a member of the board of deacons. Frank reports that his older daughter has married but is continuing her teaching.

Bill McPherrin, agent for the Kansas City Life Insurance Company at Kansas City, writes that his oldest son has been graduated from Stamford University and is in the Los Angeles office of a nationally known accounting firm. His younger son is a junior at Stamford and is advertising manager of the college Daily News. — HAROLD B. RICHMOND, Secretary, General Radio Company, 275 Massachusetts Avenue, Cambridge 39,

Mass. CHARLES P. FISKE, Assistant Secretary, 1775 Broadway, New York 19, N.Y.

1915

Your splendid response to my gentle knock on your door for class dues proves the truth of those famous words: "Knock, and it shall be opened unto thee." But a few "regulars" have not yet paid their dues, and if you are one of these you can ease your mind by sending me your dues with a note about yourself. It is many such small notes that provide this excellent column of interesting news about your widely scattered Classmates.

Ken Boynton, 79 Avenue des Champs-Elysées, Paris, VIII, France: "I am pleased to send you my check for class dues. I should like to write you at more length, but as I have just returned from New York and am about to leave for Scandinavia, I shall have to make this short. I enjoyed seeing Frank Scully here last November and hope that other members of the Class will look me up if they come to Paris. I travel a great deal around Europe but am back in Paris between trips and hate to think that any members of the Class might come this way without letting me know."

Hope Holway, batting for Bill, from W. R. Holway and Associates, Tulsa, Okla.: "W. R. Holway is having fun in various ways: watching his sons, both Tech men (D. K. Holway, M.S., '47, VI, and William N. Holway, B.S., '43), break into the consulting profession as his 'associates.' They are taking much of the burden, especially the various chores that W. R. never did like — going to city commission meetings, talking to material men, writing specifications, and so on. We have several small municipal jobs of waterworks improvements and sewerage systems and electric distribution systems. Tulsa is doubling her Spavinaw water system, after a report which we wrote in the last days of 1947. The Grand River Project still absorbs much time and attention. The acquisition of a steam plant is just over the horizon with the attendant expansion.

Another kind of fun that W. R. has is the planning and planting of a new orchard and berry patch on Holway Point on Grand Lake, where the new house is building — a summer home for all the Associates and their families. The question of who is to take care of the berries after they are picked has not yet come up. W. R. has also done considerable painting and sanding in the new house on bad week ends this winter. He gets considerable further enjoyment out of his four grandchildren who live in Tulsa. He is either 'Boppy' or 'Grumpop' to them, a person who is either coming or going most of the time. Besides these interests, there are about 50 white-faced cattle, 60 pigs, 40 sheep, along with 100 chickens. They take considerable time and thought, keeping the stock up and the freezers full, and with present prices there is even a bit of money in the business — none too much, however. The ranch conferences are held by the open fire at 7:00 A.M. with coffee. When the ranch overseer sees the car in the yard, he knows the boss is up from Tulsa and will be waiting to talk things over. Interests are varied by flights to Washington or else-

where and conferences with the W.A.A., F.W.A., F.P.C., R.E.A., B.F.C., and such. Quite a lot of fun, I believe he would say."

Little Andy, otherwise A. H. Anderson, 49 West 69th Street, New York City: "I'd like to help Azel more but will at least keep in the running. I am sorry I missed the New York dinner. I received your letter about the 50th class gift and will write you later on this. Regards to the old Pirate, the rest of the gang, and yourself." — Max I. Woythaler, Hodgman Rubber Company, Framingham, Mass.: "Inflation! You asked for five; unconsciously (?) I made it out for 10; you can skip me on the next touch!"

Ever faithful Pellian T. Mar, Admiral, Chinese Navy, Kiangnan Dock Yards, Shanghai, China: "The Chinese people are very much interested in the future decision of the United States Congress on the question of aid to China and also a clarification of American policy toward China. It appears at the present time that Communism is going ahead at a rapid rate. The world will need an over-all policy in order to deal with this malady effectively and expeditiously. I hope this letter will find Mrs. Mack and you in the best of health and enjoying your continued success." A good time to pause and give thought to what Pellian says of the involved foreign situation.

And give a thought to your class dues — help Azel!

Bill Campbell, M.I.T., Cambridge, Mass.: "Herewith some lettuce. I'm saving some new stories for you. I hope Frances has you well trained by this time." (Bill, I've become a vegetarian.) All who know our charming Bill can appreciate his humorous implications. — Ralph W. Mendelson, Albuquerque, N.M.: "In answer to your 'long time no hear, how come' I say: 'Long time in Army — how come?'"

Speed Swift, Windy Acres, New London, N.H.: "Here tiz. Don't spend it on bum liquor! I seem to have missed you on my last two trips to Boston — once at a council meeting and lately at the alumni telephone meeting at Walker. Fanny Freeman and I had to do the honors for '15. Fanny had another of his boys along, and he seemed to enjoy the telephone demonstrations no end. I am still thinking about politics again after four years of rest. If I do jump in, I will keep you posted." The grapevine has it that Herb is going to run for something up there in New Hampshire. Maybe he feels this will be his big chance — all the best to the 1915 hope for a governor in the Class.

Abe Hamburg, 19 High Street, Boston 10, Mass., gives me a lot of liberty, because my knowledge of his past may be worth a fortune: "You know all my doings — thanks for the opportunity to pay class dues." Abe and Haya Hamburg celebrated their 25th wedding anniversary with a long cruise to Bermuda, the Bahamas, and Georgetown. For the hard work Abe has put into making his business, the Superior Engraving Company, Boston, a success, he richly deserves this luxurious rest and has 1915's best wishes for 25 more happy years.

Clyde C. MacKenzie, Charles A. Maguire and Associates, 11 Pemberton Square, Boston: "I hope this will help you carry on your good work. As you well know, I'm too

modest to write an autobiography." Hoot is one of the old-timers who has become active in the Class since his return to Boston, and he's a welcome addition to the 1915 gang of good fellows who get together. — Doug Baker has completely recovered from his recent operation and illness: "The name to which you want the check made out is so long that I have writer's cramp and can summon only enough strength to say that everything is all right with me. For about six weeks I have been working at our new labs in Nutley, N.J., and enjoying the country atmosphere." — String Hill, National Fire Insurance Company, 1000 Asylum Street, Hartford, Conn.: "There is nothing to brag about but our grandchildren (five) — all girls, one pair of twins. Thanks for your devotion and efforts." String must be very nearly leading the league in the number of grandchildren.

Jim Tobey, 840 Forest Avenue, Rye, N.Y., back in civilian life after serving three years as a colonel in the Army of the United States in charge of military government activities in Germany and other European countries, has just produced "the third edition of *Public Health Law*, published by the Commonwealth Fund, New York. First issued in 1926 and reissued in 1939, this is the standard text on law for the public health official and public health for the lawyer and judge; also, the second edition of *Legal Aspects of Milk Control*, published by the Milk Industry Foundation, New York." Jim wrote me that he had spent the month of February in Gainesville and Lake Wales, Fla., with his daughter and son-in-law.

Thanks to Daniel G. Hulett '42, and congratulations to young Bengston: "The members of the Class of 1915 may be interested to know that among the young men who recently qualified for the degree of bachelor of science in chemical engineering at the University of Michigan was John Miner Bengston, son of L. T. Bengston '15. Dad Bengston is still practicing architecture in Charleston and resides at 703 Laurel Road, Charleston 4, W.Va."

Howard King sent a clipping from the *Engineering News-Record* for March 11: "Rear Admiral William H. Smith, Civil Engineer Corps, U.S. Navy, has retired from active duty, after 30 years commissioned service, to become chief engineer for the consulting firm of Palmer and Baker, Inc., with headquarters at Mobile, Ala. Adm. Smith most recently has been director of the Atlantic Division of the Bureau of Yards and Docks, exercising general supervision over all that bureau's activities in the Atlantic, European, Caribbean, Mediterranean and Near East areas, and concerned with coordination of the peacetime nucleus of the 'Seabees' now serving in those areas. Adm. Smith was graduated from . . . Technology when he was barely 20 years old. He became a Navy lieutenant in 1918, and when he reached the rank of rear admiral in 1943, was one of the youngest men ever to hold that rank. He became public works officer of the New York Navy Yard, supervising civil engineer for Area II, director of the planning and design department of the bureau, and in 1944 was designated

chief planning officer and in 1946 assistant chief for plans and research."

Have you helped Azel with your class dues?

As you probably know, it is customary for each Class to make a capital gift of some kind at the time of its 50th reunion. Inasmuch as our 50th does not occur until 1965, it might seem a little previous to be considering this subject. To a group in the Class, it seems that consideration now would have three main advantages: (1) it will make it much easier for us all to do our financial part; (2) it will assure that our gift will be ready for presentation in 1965; and (3) it will mean perhaps a larger gift than we normally could present if we delayed until that time. You may have read in The Review of the committee formed here in Boston last fall with Gene Place as chairman, to work on this problem for the Class of 1915. (The committee was instructed to call on anyone else in the Class for help.) On a business trip to the Pacific Coast recently, Gene had lunch in Los Angeles with Dave Hughes, Ben Rivers, Bob Wells, Brute Crowell, Arthur Ball, Ken Kahn, and Bob Stringfield—a most loyal response. They were actively interested in Gene's plan and heartily approved it.

A dinner in Boston at the Harvard Club on March 18, was attended by 34. This record-smashing attendance—an excellent testimonial of 1915's friendly class spirit—discussed Gene's plan at great length. Gene held the floor against all questioning and is ready soon to appoint regional, course, and fraternity committees and put you all to work to get "\$50,000 for '15 in '65." In addition to a gift for each classmate present, the Gillette Safety Razor Company's new "Speed-Pak" containing 20 blue blades, Louie Young and Louie Gale made us all "look sharp, feel sharp, and be sharp" with Gillette's motion pictures, "Calvacade of Sports," showing World Series and All-Star baseball games, college football games, world championship heavyweight fights, and the Kentucky Derby. The applause attested our interest in this entertaining show and our appreciation. We topped this off with Herb Swift's colored movies of the 1946 Victory Reunion at Falmouth, which could well be titled "People are Funny!"

Pay your class dues!

You can't beat this 1915 class spirit. Ben Neal, Lockport, N.Y. wrote: "Needless to say, I should dearly love to be at the class dinner, but unfortunately that's the day on which Peggy arrives home from Boston; so I am afraid I can't be in on it. Under separate cover, however, I am sending you down two boxes of windshield scrapers. It's pretty late in the season, but even so, all the boys should be equipped with one." I never knew before that so many classmates had two or more cars in their families, for these scrapers disappeared so quickly that even the Secretary, who has only one big, powerful coupé, was unable to latch onto one. However, many thanks, Ben, from us all for your generosity and thoughtfulness.

The splendid gathering included: Bill Brackett, VI, Whit Brown, IV, Bill Campbell, I, Sam Eisenberg, XIV, Don Fowle, IV, Fanny Freeman, IV, Louis Gale (adopted),

Les Heath, V, John Homan, XIII, II, Frank Herlihy, II, Wink Howlett, X, Clive Lacy, VI, Azel Mack, X, Clyde Mackenzie, X, Archie Morrison, II, Pete Munn, I, Frank Murphy, VI, Harry Murphy, I, Johnnie O'Brien (of course), Stan Osborn, VII, Wally Pike, I, Gene Place, VI, Pirate Rooney, I (what else), Chet Runels, IV, Frank Scully, I, Jac Sindler, X, Ed Sullivan, II, Henry Shiels, I, Ercell Teeson, II, Easty Weaver, XIV, Paul Weymouth, V, Carl Wood, I, Max Woythaler, V, Louie Young, II. Long-distance prize winners were Stan Osborn, Hartford, Conn.; Ercell Teeson, Southbridge; Hoot MacKenzie, Providence; Max Woythaler, Framingham; John Homan, Beverly; Whit Brown, Concord. No words describe the good fellowship of 1915.

Help! How about your class dues?

It's hard to single out any individual in 1915 among such a fine group, but there is one chap who deserves the thanks and appreciation of the Class for his continued interest, indefatigable energy, and constant hounding in keeping after me to get things done. He energizes me into organizing class dinners, writing letters, contacting classmates, getting out our column. He's modest and asks no acclaim, but all you '15 men give him a hand and a cheer (by proxy)—Henry Shiels.

The class flag flies at half-mast for San Willis, who died on February 19 in Marshfield, Mass. San's passing brings a sad loss to our Class. Active as an undergraduate, he continued his interest with regular and generous support of the Class and the Alumni Fund. He attended every reunion and wrote interesting news for our column. Devoted to the Institute, he sent two children to M.I.T. and often visited there himself for reference work. May San's noble spirit go marching on among us as a fine example for us to follow and a memory for us to cherish. Flowers were sent to his funeral from the Class of 1915, and I attended the service at the Episcopal Church in Duxbury. We extend our sympathies to San's family, who still retain his feeling for 1915.—AZEL W. MACK, Class Secretary, 40 St. Paul Street, Brookline 46, Mass.

1916

Your Secretaries are highly gratified at the response to their requests for information for inclusion in the class notes. Some feel that they have not much of interest to other members of the Class, but every little bit of information is of much more interest than perhaps the writers may realize.

Recently we had a letter from Arthur S. Neave, running as follows: "It seems a very long time since 1916—and so it is. Three years ago I became eligible for membership in the 25-year club of our company—the Cincinnati Chemical Works. I am chemist and supervisor of one of the departments. Our business is principally organic dyestuffs and intermediates. During the war, we were the first and principal manufacturer of D.D.T. I have one son who served 33 months in the war—18 of them in Europe. He is now married and this June will be graduated from the school of chemistry of the University of Illinois, after which he is coming into our company."

George M. Maverick writes as follows: "I have been with the Standard Oil Development Company since 1923, in recent years serving as personnel manager. After many years at 26 Broadway, I have recently moved to the new Esso Building at 15 West 51st Street. I am on the 26th floor, where I have a fine view of the Center skating rink and the roof of the Music Hall, where I am told the Rockettes sun-bathe, come a little less goose-fleshy weather. My son, George, gave me a powerful Navy spy-glass for Christmas, and I cordially invite you and others in the Class of 1916 to try it out. We live in Elizabeth, N.J., and seem to keep very busy, mostly with grandchildren, of which we now have seven."

We have received a welcome letter from John Burford, from whom we have not heard for a very long time. John, as we may recall, was born in Louisville, Ky., and we judge that he likes Kentucky pretty well, for he writes today from 1227 South Floyd Street, Louisville 3. In January, 1917, he married Constance Cassilly. We regret very much to hear that his only son, John, who was a second lieutenant in the Army Air Forces (bombardier), died early in 1944 at Blythe, Calif. His daughter, Constance, is now a sophomore in college on a two-year scholarship. He was registered as a professional engineer in Indiana in 1926 and in Kentucky in 1940, and is presently associated with a Louisville firm of architects as structural engineer.

Walt Binger sent us a very prompt reply. I'll admit it was very short, but he did enclose some newspaper clippings about his work as chairman of the traffic action committee of New York City. He is fighting for a separate department to control New York's traffic—and goodness knows they need it. Keep fighting, Walt, it's for a very good cause.

Mark Aronson came through with a newspaper picture of Steve Brophy with the other members of the head table of the Brotherhood Week observance meeting of the Advertising Club of Boston. Steve, as you know, is the president of Kenyon and Eckhardt.

I clipped a very heartening article from the *News and Courier*, Charleston, S.C., by Tom Holden, who was visiting Sam Lapham. Tom is the president of the F. W. Dodge Corporation. He said that the United States is headed for a long period of prosperity after inflation is stopped and prices are stabilized. "All commodities," he observes, "including building materials, as well as costs of building, are too high. We may have a short setback in general business and building activity, sometime this year, when we may see a stabilization which will enable us to go ahead with an extended period of building activity. This stabilization period will be good for business because, if prices should go higher, it might take an extended setback to stabilize them." It sounds reasonable; we hope it will work, Tom.

Elie Boucher writes nothing more than that he is living a normal existence and carrying usual human burdens.—Does anyone know Marcel Gillis' address? Please, if you do, will you send it to me?

Nick Balyozian writes as follows: "I am still with the Atlantic Research Associates,

and the laboratory and plant have moved from Newtonville to Cambridge. We were engaged in the development of Aralac, the protein fiber, for the National Dairy Company, and this took about seven years, but at present we are doing work on high molecular weight polymers and synthetic resins. I am still single and spend any spare time I have attending hockey, football, and baseball games, the latter preferred. Lately, all I have been doing is shoveling snow (And haven't we all, up here in New England!). If any of the golfers in the Class happen to come out to the course in Ponkapoag, I live right near there and should be glad to see anyone who is in the vicinity of Canton."

A letter from Bill Leach reads as follows: "When I received your letter of January 29, I let it lie around. But having received Cynthia's nice note . . . I hasten to answer it. [Well, as long as one of us brings in the news, it's all right; but if you '16 men don't want to answer my letters, will you please answer my daughter's?] I came down to Austin in February, 1942, when I left Du Pont at Niagara Falls, because I thought that I could be of maximum service in the war effort. Here I assisted in the design and construction and was production manager for a magnesium plant operated by the International Minerals and Chemical Corporation as agents for the Defense Plant Corporation. We operated for two full years up to schedule and should have done better if the War Production Board had not put on the wraps during the last year. When the plant closed down, I kept on living in Austin because we were fortunate in having bought a nice place there, and the climate and people were interesting. I organized the Southwest Cedar Oil Company and the Southwest Products Company, which I have since sold, and am now developing several projects here and also doing consulting work which brings me to the East occasionally. As you know, Tech is pretty dilute down here, so that I do not meet many of our vintage. I see Bob Wilson several times a year and during the winter of 1947 had a most delightful trip to California with the Wilsons and Mrs. Leach, of course. I write to Earle Pitman occasionally. I am looking forward to the 35th reunion in 1951 and hope that our troubled economy will be peaceful enough by then so that I can attend (and beat Bob Wilson playing golf — never have!) If any of you Republicans get down here, be sure to look me up! I'm lonesome but hopeful."

A long and very interesting letter from Abby Christensen follows: "Ever since 1924, I have had a connection, more or less, with the Pine Mountain Settlement School in an isolated valley of the Kentucky mountains. At first, I was a full-time worker. Now again for the last four years I have been working here full time. In this quarter-century I have seen the change from pioneer modes of life to Twentieth Century patterns. I saw the last of the virgin timber before the lumber companies took it. I've seen roads replace trails and travel by foot and horseback give place to automobiles. Spinning, vegetable dyeing, and weaving have practically gone in these 24 years. And the coal mines have come and are spread-

ing, with all their accompanying social, economic, and educational problems. Twenty-four years ago, the majority of Pine Mountain students worked their way through school. Now-a-days, most bills are paid in hard cash, and whereas formerly a boy used to be rich with 50 cents a quarter for spending money, the sums now spent at the school co-op store are lavish. Students are somewhat more sophisticated now, but the admirable mountain character doesn't change — sturdy, sober, independent, and resourceful. They still speak mountain English and sing mountain ballads. This school is a private school and free to work out its own theories of high-school education for boys and girls whose grammar school education has been pitifully lacking. We may not turn out many good prospects for college, but we do turn out good citizens. To one accustomed to the high standards of education in New England, the state of elementary education in rural Kentucky is hardly believable. It is the rule rather than the exception to find eight grades taught in a one-room schoolhouse, by a girl who herself may never have attended high school. I may as well confess that I am interested less in telling about myself than in shouting to all who will hear that there is no patriotic service more needed and more rewarding for adventurous spirits than that of teaching in the southern Appalachians. If you care less for fame and fortune than for having your work count, if you find the American character stimulating and a stiff problem exhilarating, then come South."

Ed Hale has sent us the following report of his activities since 1916: "During the summer of 1916, I worked with the equipment engineers of the Stone and Webster Engineering Corporation helping them to finish the Cambridge buildings. When school opened in the fall, I began a school-year contract with the late Professor A. H. Gill as his private assistant. This was very interesting work. I remember that one of the problems was to collect information on the hydrogenation of cottonseed oil in preparation for a lawsuit between the various manufacturers who were beginning to see the possibility of margarine. In June of 1917, I began to work with the Liquid Carbonic Corporation, whose headquarters are in Chicago.

"Although my work in the compressed gas division of this company was enough to get me an exemption from military service, I felt impelled to do my part and obtained a leave of absence and for about six months was the Y.M.C.A. secretary at the Great Lakes Naval Training Station and then entered the service in the Chemical Warfare division. After the war ended, I returned to Liquid and was very busy designing, erecting, and getting into operation a number of carbonic gas plants. For years, I was out of town a great deal doing this work, but recently my duties have kept me in Chicago most of the time. When I began with Liquid, they had nine CO₂ plants. Now we have about 27 plants in the United States, together with four oxygen plants, five acetylene plants, two nitrous oxide plants, beside a number of plants in operation or being erected in South America.

"Five years after coming to Chicago, I married an Oak Park, Ill., girl and have lived in this suburb ever since. I now have three children. The older girl was graduated last year from Carleton College, at Northfield, Minn. She inherited much of my wife's ability, for she graduated as an honor student, magna cum laude, and a member of Phi Beta Kappa, and obtained a fellowship to study at the University of Lausanne in Switzerland. The younger girl is a sophomore at Carleton College. The youngest member of the family is a 14-year-old boy, who is a freshman at the Oak Park high school. I have now lived in the Middle West longer than I did in the East, but they say I still have an accent, and my wife and others catch me referring to New England as 'God's country' and 'my home.' I have seen relatively few '16 men since I came to Chicago. The local Technology Club gives us an opportunity to see some once in a while — Bob Wilson, Joel Connolly, and Saul Hoffman being the ones who attend most of the meetings. We should all like to see more '16 men, and I hope if any reading this letter are ever in town, they will at least telephone us."

Kem Dean writes a line from Houston, Texas: "Sorry I haven't much news for you. I have been in the cotton business for 28 years. My oldest daughter, Ada, was married last October to a Houston boy, who is a young lawyer; and now my other daughter, Martha, is to be married in August to a Shreveport, La., boy who will be graduated this June from the University of Texas in petroleum engineering. Two weddings in one year is a little rough." (It certainly is, Kem!)

Does anyone know the whereabouts of Fred Glen? The last address we have is Riverton Heights Branch Post Office, Seattle 88, Wash. I have received a letter from Charles E. Locke '96, the Alumni Secretary, asking me to serve on the Advisory Council for Tech Shows for five years. — RALPH A. FLETCHER, Secretary, Post Office Box 71, West Chelmsford, Mass. HAROLD F. DODGE, Assistant Secretary, Bell Telephone Laboratories, 463 West Street, New York 14, N.Y.

1917

It is unfortunate that The Review does not permit enough space to reproduce in full the copy of the Janalu Farm News, recently received and "published whenever the spirit so moves by Mr. and Mrs. Neal E. Tourtellotte, owners of Janalu Farm, located in Happy Valley, on the Avondale Road between Redmond and Cottage Lake. Mail address: 404 White Building, Seattle, Wash." It is a treatise on the raising of swine and the sale of the same. The first article in the eight-page journal states, "Like the big mail-order houses [we assume he is talking about Brooks, Sears and Roebuck] we try to tell you everything about our product." The paper is beautifully illustrated with, by actual count, 47 pictures of swine, all of which look alike as pigs in a pod to us, each one being enormously fat. Upon looking closely at the last picture on the last page, we caught a familiar glint in the eyes, and sure enough, it was a picture of the

editor himself, who looked fully as well fed as his pets. By the time you read these notes, you will have read in the press that a new shell has been officially christened by Lobby the "Ralph T. Jope," a good friend of many of us and of athletics at the Institute, and that this shell along with an extra set of sweeps—meaning oars to the land-lubbers—was a gift from Neal. There must be gold in them that swine.

Speaking of boats, we learn that Enos Curtin momentarily forgot his age and tried to lift a dinghy, with the net result that it cost him three weeks in bed and \$650 for personal repairs. We are indebted to Phil Hulburd, who has enough sympathy for our plight to send us a news item occasionally, for a clipping from Time telling us that Leslie Groves, Lieutenant General, U.S.A., is to become research head of Remington Rand upon his retirement from the Army. A recent bulletin to the stockholders of the E. I. du Pont de Nemours and Company announces that the board of directors has elected Walt Beadle a member of the executive committee.

Ras Senter was host to Lobby on the occasion of a recent trip through Mexico which took two weeks, and they parted good friends. We hear that Ras took eight suits on the trip, and we assume an equally plentiful supply of boots and kerchiefs similar to the ones he sported in paper bags at the Wentworth last June. Frank Sada, who is in the cattle business in Monterrey, staged a well-attended alumni dinner for the visiting firemen, which reminds us to remind those who do not already know it that Bob Moulton of the National Fire Protection Association is rated by those in the know as one of the outstanding fire engineers in the country. We thought we might get some news from Bob Erb but were sorry to learn that New Hampshire is a dud as a source of happenings unless you happen to be a Republican. Bob does occasionally see Warren Tapley, who travels New Hampshire for the New England Container Company of Chicopee, Mass. We learn from our society reporter, Rudy Beaver, that Heine Gartner's younger daughter was married recently to Thomas J. Maloney, who becomes newsworthy by the fact that he is working for Win McNeill's General Aniline.

Tom Meloy writes that he had a meeting with Messrs. McNeill, Loengard, Proctor, and Littlefield in McNeill's luxurious office. A representative of the Cosmos Press was present, and final decisions were made on the class book, which has now gone to press. There will be about 20 pages of pictures. This information was confirmed by Win McNeill, who recommends that kudos be awarded to the above-named gentlemen along with Bob Shand and Tom's efficient secretary, Miss Wright. It is hoped that the book will be ready for distribution by Alumni Day in June. — RAYMOND STEVENS, Secretary, 30 Memorial Drive, Cambridge 42, Mass. FREDERICK BERNARD, Assistant Secretary, 24 Federal Street, Boston, Mass.

1918

Once more, via Royal Barry Wills, we have a communication, this time from Sax Fletcher, who says in part: "As you know,

I was made president of our American and Canadian companies a few years ago, and the terrific expansion of business that has taken place during the last two or three years has kept me pretty much on the jump. We still specialize in air applications for industry but have broadened our field to get into practically every type of manufacturing. I am sending you, under separate cover, one of our books entitled 'Air for Industry,' which I am sure you will enjoy. You can judge from the list of our customers that our coverage is broad. We now have offices in Boston, Chicago, Detroit, Los Angeles, New York, and a Canadian company located in Montreal. This past summer I used my vacation touring with the family through the Rockies, national parks, and on to the West Coast, where we journeyed all the way from Los Angeles to Seattle. In Seattle, we spent the night with Donald Bradley, who is in the building supply business there with Neal Tourtellotte '17. They are doing very well. Lobdell '17 was in Seattle the same evening, and we all enjoyed a delicious buffet supper at Neal's farm about 30 miles outside Seattle. Don has promised to come East in June and possibly can take in the 30th reunion. I have followed your fame and have enjoyed looking at the designs of some of the beautiful houses you have been creating. Inasmuch as I have a farm in New Hampshire, I was particularly taken by your modern farmhouses. Some day I may call on you to help me in building a new farmhouse."

John R. Fuller, who is the purchasing agent for Sylvania in Salem, was seen in Boston recently by one of the brethren but defied all the old news-gathering chestnuts like, "How've you been?" On being pressed, he reported that one of his daughters is a medical technician and the other engaged in office work. We report with sorrow that Mrs. Fuller is dead. The way John has taken up arms against his personal sea of trouble is through the fascination of running a greenhouse in his back yard. He says this hobby can be pursued for 12 months in a year and ridden hard or neglected as the spirit moves. There is something time-effacing in the soil and something more precious than a sigh of contentment in the production of a flower. A purchase order for \$10,000 is dull, prosy stuff beside the momentary glow of self-sufficiency which comes when you repot a geranium.

Plans are under way for a dedicatory service for the organ at three o'clock on Sunday afternoon, May 16. Dean Caldwell will open the occasion, Dean Baker will read the scripture, the Glee Club will sing two anthems, our own Harry Camp will give an organ recital, the Class President will make the presentation, and Dr. Compton will receive the key to the console, as symbolic of the transfer of title, and accept the gift for Technology. The Musical Clubs, the Faculty Committee on Graduation, and the Department of Humanities are all very excited over having an organ. Even the Walker Memorial Dining Service is excited, for now there will sometimes be dulcet music with the meals. We had most of the money for all this until the government slapped on a 20 per cent tax with no exemptions for any

cause whatever. The financial situation as of April 1 is that our fund is \$802 short of the necessary sum. After consultation with a few of the Boston classmates, Alexander Magoun took the responsibility of placing the order for the organ. This means that he could be liable for the deficit, and although the sum probably does not represent his life savings, it is a serious amount for someone who has taught school all his life, put three children through college, and still has a son in graduate school. See you at reunion.—GRETCHEN A. PALMER, Secretary, The Thomas School, The Wilson Road, Rowayton, Conn.

1919

The Class is proud of Henry E. Wilson and his record as outlined in the Ipswich, Mass., Chronicle under the date of January 29. The following abstract from this newspaper augments his biography on Page 157 of our "Twenty-five Years After": "Capt. Henry E. Wilson, CEC, USN, is a shining example of 'local boy who made good.' An official U. S. Navy release received by the Chronicle states in part: 'A native of Ipswich, Mass., Captain Wilson is well known in New England. He is a graduate of the Beverly High School and . . . Technology. He was commissioned in the U. S. Navy as result of a competitive examination in 1921. During World War II, Captain Wilson spent several years in the Pacific war area, serving in New Caledonia and Pearl Harbor.' The Commodore Heim bridge, according to the release, was 'dedicated to the first commander of the Naval Operations Base at Terminal Island. It was built under the direct supervision of Captain Wilson, who was officer in charge of the project from June, 1945, until October, 1947.' During World War I, it has been learned locally, Captain Wilson was First Lieutenant Wilson of the U. S. Army. After demobilization and some time with the Bethlehem Steel Company, he found his true career in the Navy. Of his three sons, one is now a commissioned naval officer, another is a midshipman at Annapolis, while a third has set his sights in the same direction. Captain Wilson returns to his boyhood home as often as he can. . . . On one such visit recently, he addressed the Ipswich Rotary Club. It is certain that this 'local boy who made good' has a warm spot in his heart for his old schoolmates and the Ipswich of his youth."

William R. Osgood informs us that he is now technical consultant and acting chief supervisor of the structural mechanics department at the David Taylor Model Basin, Washington 7, D.C. W. Roy Mackay is still with the Bethlehem Steel Company at Sparrows Point, Md. George Michelson suggests that our 30-year reunion should tie in, if possible, with graduation in June, 1949. Herbert C. Merrill may now be reached at 17 Battery Place, New York 4, N.Y.

The Brockton, Mass., Enterprise of February 17 informs us that Carl G. Polson on the above date observed his 25th wedding anniversary with the former Mildred E. Carlson. Their two sons, Harold A. Polson, a Marine Signal Corps veteran of the South

Pacific, and Richard C. Polson are at Upsala College, East Orange, N.J., and superintendent of the distribution department for the Brockton Edison Company respectively. Carl has been with the Brockton Edison Company for more than 30 years. He was an air force veteran of World War I, is vice-president of the Electric Lines Club of New England, and is a trustee of the First Lutheran church.

We regret to announce two deaths. Lawrence C. Colby, of 33 Sawyer Street, Portland, Maine, died on February 10. He was a fire insurance inspector for Maine in the Eastern Inspection Bureau, was a 32d degree Mason, and left a widow, Mrs. Cecelia E. Colby, a son, Kenneth S. Colby of Palm Beach, Fla., and a brother and sister. W. Scott Hammond, who was with the Mathieson Alkali Works in Houston, Texas, died on February 7 at New Orleans, La.

Harold F. Marshall was elected to the Borough Council last November on the G.I. Progressive Republican ticket in Palmyra, N.J. Edward G. Moody is still treasurer of the firm Ed G. Moody, Inc., of Boston, Mass. Your Secretary is still anxious to have comments from the Class with regard to 30-year reunion plans. — EUGENE R. SMOLEY, Secretary, The Lummus Company, 420 Lexington Avenue, New York 17, N.Y. ALAN G. RICHARDS, Assistant Secretary, Dewey and Almy Chemical Company, 62 Whittemore Avenue, Cambridge 40, Mass.

1920

If all you fellows were as thoughtful and conscientious as good old Chuck Reed, your Secretary would think the Millennium had arrived. Responding to the recent request for information about sons at M.I.T., Chuck reminds me that his son Edwin was graduated in 1945. Edwin, like his father, married a Wellesley girl, whom Chuck describes as "a beauty from Dallas, Texas." Chuck's other boy is now at Andover but is not headed for M.I.T. Edwin, by the way, is associated with his father in what is now the Forbes Finishes Division of the Pittsburgh Plate Glass Company in Cleveland. Chuck is divisional director. He has just returned from a 17-day cruise to the Caribbean, which he describes as a slightly belated celebration of his 25th wedding anniversary. Chuck admits that he has taken time off from business for a few short vacations in the form of hunting or fishing expeditions to Canada and an antelope hunt in Wyoming. Last fall he visited the Lake of the Woods to shoot bluebills. He points out that they also have fine hunting on the south shores of Lake Erie, not far from Cleveland but far enough when the daily limit is only four ducks. Chuck urges any of the gang to get in touch with him if they are in the vicinity of Cleveland. His address is 3800 West 143rd Street.

Warren Chaffin has been elected president of J. L. Stifel and Sons, Inc. He joined the firm in 1930 as works manager and became general manager in 1944. The main plant is in Wheeling, and they manufacture textiles. John R. Perkins of Wayne, Maine, has been appointed town manager.

Phil Haebler's son was recently married in New York to Suzanne Tolcott Curry.

Phil lives in Montclair. Roland Baker is in Phoenix, Ariz. Ed Cousins is in Akron. John Lucas has left Mexico and is with Ford, Bacon and Davis in Chicago. Bill Meissner has moved from Newark to East Orange, N.J., where his address is 320 South Harrison Street. — HAROLD BUGBEE, Secretary, 7 Dartmouth Street, Winchester, Mass.

1921

The Institute's architectural plans for the World War II Memorial in the main lobby are assuming final shape, according to information from Jack Rule, who is a member of the Alumni Council committee on memorials as well as on our class gift committee, headed by Zam Giddens. Zam, Dan Harvey, Ray St. Laurent, and your Secretary planned a New York meeting in March which had to be postponed when Ray contracted a bad case of gripe. By this time, you will probably have received an account of the memorial which Technology has approved and further details of how you may participate in completing our 25th anniversary pledge to underwrite the memorial as our class gift.

A check of the Directory of Students (plus the help of Theodora Keith '32 of The Review staff) reveals that 18 sons and one nephew of members of the Class are now studying at the Institute. There are three sets of brothers in the group, which is divided among the undergraduate classes as follows, parentheses indicating the father's name: Freshmen: Noel T. Adams (Frederick W. Adams), John M. Lee (John G. Lee), Francis B. McKee (Captain Andrew I. McKee, U.S.N.), Arthur H. Schein (Sumner Schein), Charles E. Thornton, Jr., and Thomas A. Thornton (sons of Charles E. Thornton). Sophomores: Herbert C. DeStaebler, Jr. (Herbert C. De Staebler), Willard S. Emery (Willard A. Emery), William B. McGorum, Jr. (William B. McGorum), Stephen H. Senzer (Sidney Senzer), John E. Bent (Roderick L. Bent). Juniors: Frederick W. Adams, Jr. (Frederick W. Adams), John W. Barriger IV (John W. Barriger, 3d), Gary S. Colton (H. Seymour Colton), Malcolm H. Kurth (Henry R. Kurth). Seniors: Paul N. Anderson, Jr. (Paul N. Anderson), William W. Conant (Lawrence W. Conant), Gardner L. Bent (Roderick L. Bent). Ray St. Laurent's nephew, Wilfred H. St. Laurent, Jr., is in the Class of '51. There are a number of other familiar names in the list which your Secretary is unable to identify with certainty as related to members of the Class, and it will be appreciated if you will tell me of any omissions or corrections.

Reporter Ralph M. Shaw, Jr., is far ahead of the field with the first secretarial committee news letter this month. Rufe is president of the Pedrick Tool and Machine Company of Philadelphia and lives at "Shawne Hall" in Beverly, N.J. He writes: "Edwin L. Rose has sold his home in Waterbury, Conn., and he and Mrs. Rose are living at the Gramercy Park Hotel in New York City. Their son Roderick, who is 14, is in school at Deerfield, Mass. Ted is doing consulting work and is part owner of a steel mill. Paul Rutherford has the official title of assistant works manager of

the Rochester plant of the Delco Appliance Division of General Motors. William R. Matthews is the owner and manager of W. R. Matthews and Company, a mill supply house in Spokane, Wash. Bill handles the Pedrick line among his other accounts. George A. Chutter is a manufacturers' representative in Jersey City, N.J. In addition to the Pedrick line, Chut also represents the Globar Division of the Carborundum Company, the Harper Electric Furnace Corporation the Ransburg Electro-Coating Corporation and the Vulcan Corporation. Ralph H. Gilbert '19 is still with the New York Telephone Company. Some time ago, Gillie was made manager of the planning department. Dugald C. Jackson, Jr., is engaged in private consulting work. His son David, a graduate of Yale, is the only Jackson now in Jackson and Moreland. Harold H. Cake was a recent visitor to the East Coast in connection with the shipment of materials to J. E. Haseltine and Company, the hardware supply firm in Portland, Ore., of which he is vice-president."

Hard on Rufe's heels is a letter from George W. Spaulding, Baltimore member of the secretarial committee and assistant chief engineer of the Pennsylvania Water and Power Company. Whit says: "Tom Proctor is living on his farm in Darlington, Hartford County, Md., but I have not been out there to visit him. Mel Rose is chief engineer of the Chesapeake and Potomac Telephone Company of Baltimore City and has a major job on his hands. His company has been through a rate proceeding before the Maryland Commission in order to continue its major construction program of central offices, extension of the dial system and other expansion. Recently Mel accepted appointment as one of three honorary secretaries for this area, and he is doing a swell job, notwithstanding the pressure of business. Adolph Denbin is assistant superintendent of power for the Baltimore Transit Company. He has been facing real problems, as the company has been trying to convert a large portion of its fixed wheel operations to gas buses. As for me, I have been living in Washington for the last two years presenting my company's rate case history to the Federal Commission, which has meant that we have had to defer many other operating matters which should have current attention."

Lawrence W. Conant is making a special effort to cover his Washington assignment on the secretarial committee by asking a group of the local fellows to share his job of collecting news. Hereafter, we may expect to hear from his entire "Capital Chorus," including Harold Bixby, Paul Johnston, Dick McKay, Dan Noce, Cap Officer, Elliott Roberts, George Schnitzler, and Dick Smith. Larry has, for the past 10 months, been chief of the spare parts branch of the maintenance division, Office of the Chief of Engineers, and is located in Building T-7, Gravelly Point, Va. Of his family he reports: "My son, Bill, is a senior in Course XV at the Institute. He has been leading the singing at some of the rallies. Another son, George, is a sophomore at Amherst, and Peg is a freshman at Pembroke. Spicer, who is almost six, is in kindergarten. My

chief hobby is still organizing and directing Dad and Son Athletic Clubs. We now have five of these groups in operation for youngsters ranging upwards from five years old."

Word has been received from the Alumni Office of the death on June 23, 1944, of Randolph Dell Faris, son of Mr. and Mrs. J. M. Faris of Youngstown, Ohio. No further details are at hand, but it is known that Randolph had been in poor health for more than a year prior to his death. He was with us in Course XV during the freshman year and later returned to Youngstown, where he had been associated with the Youngstown Mill Supply Company and had served as secretary-treasurer of the Smith-Faris Company.

Augustus B. Kinzel has been elected president of the Union Carbide and Carbon Research Laboratories. Gus has also been appointed a councilor by the Engineers Joint Council to serve in the group which represents the engineering profession on the United States National Commission for the United Nations Educational, Scientific and Cultural Organization. Howard F. MacMillin has recently formed his own company, the MacMillin Engineering Corporation of 20 East Jackson Boulevard, Chicago, Ill. Walter W. Anderson of the Anderson Potteries, Lynbrook, Long Island, N.Y., has moved to a new home in Massapequa, L.I. Dr. George Fordham is the medical director of the Koffner Coal Company, Montgomery, W.Va. H. duPont Baldwin is in Baltimore with the Aircraft and Marine Specialty Company, Inc., 5 South Street. Earl H. McBroom of Sacramento, Calif., is with the California state highway department. James E. Baylies, a brigadier general, has been assigned to head the staff of the Brooke General Hospital, Fort Sam Houston, Texas. Francis T. Whitworth has moved to a new home at 2452 Walker Lane, Salt Lake City, Utah.

Winter Dean, Twin Cities reporter, says he frequently sees Ivan C. Lawrence, personnel director of the Minnesota Mining and Manufacturing Company. Ivan was recently elected an officer of the St. Paul committee on industrial relations, which handles labor union negotiations for practically all St. Paul and Minneapolis industries. Wint says he has been made a director of the First Grand Avenue State Bank of St. Paul and that he was re-elected a director of the St. Paul Association of Commerce, corresponding to the chambers of commerce in other localities. He and Mrs. Dean are planning an annual fall vacation trip to La Jolla, Calif., to continue the fun of last year's trip. They have become such confirmed Californians that Wint prevailed on his management group to hold their annual meeting last month in Coronado.

Daniel Noce, a major general of the War Department Special Staff, is chief of the Civil Affairs Division. In this capacity, he is responsible for supplying food to occupied countries, the trial of war criminals, planning future military government activities, reorientation and the study of the accomplishments of overseas civil affairs. At the close of hostilities, he had been director of plans and operations of the Army Service

Forces and was subsequently made chief of staff and deputy commanding general of the Service Forces. Preceding his present assignment, he served as deputy director of the service, supply, and procurement division. A major in World War I, General Noce returned from France to complete his studies at Technology, after which he was in charge of the harbor defense installations at Manila and then an instructor in various Army engineering schools. After completing the courses at the Command General Staff School, he had various assignments with the Corps of Engineers and served on the National Emergency Council and the Works Progress Administration. Shortly after the United States entered World War II, he was assigned to the Office of the Chief of Engineers and was responsible for the organization and training of the four engineer amphibian brigades. In 1943, he was made assistant chief of staff in the European theater of operations, and in 1944 he was given a similar assignment in the North African theater. General Noce has been awarded the Distinguished Service Medal with two oak leaf clusters, the Legion of Merit, and numerous foreign decorations, including the Brazilian Order of Military Merit, the British Order of the Bath, the French Legion of Honor and Croix de Guerre with Palm, the Italian Order of the Crown and the Medal of the Volunteers of Liberty, the Polish Gold Cross of Merit with Swords, the Order of the Crown of Belgium, and the Lateran Cross of the Vatican State.

David O. Woodbury lectured on "Your Life Tomorrow" before the Worcester, Mass., Engineering Society and the Worcester County Mechanics Association. We understand that Dave has completed a new book which hasn't yet appeared in the bookstores.

Three reminders for your little black book: class movies and still pictures at the Hotel Statler at 4:00 p.m. on Alumni Day, June 12; help Lark Randall by returning your Alumni Fund card now; and help your Secretary with a note about yourself. — CAROLE A. CLARKE, Secretary, International Standard Electric Corporation, 67 Broad Street, New York 4, N.Y.

1922

The Class will be sorry to learn that, in late January, Al Browning suffered a severe heart attack while vacationing in Florida, and as a result has been in the Jackson Memorial Hospital in Miami. Mrs. Browning has written your Secretary, as of March 1, that although he was still in his oxygen tent at that time, he had gained ground during the previous few days and that many of the complications had been checked off, so that she felt very encouraged. We send Al our best wishes for a speedy recovery.

The New York papers of March 1 report under a Washington date line that Donald F. Carpenter, Vice-president of the Remington Arms Company, was appointed on February 29 as deputy to James Forrestal, Secretary of Defense, "in atomic energy matters." At the same time he was designated chairman of the Military Liaison Committee to the Atomic Energy Commission. As chairman of the committee, Don will head a

reconstituted committee which will include two Army, two Navy, and two Air Force members. The seven-man committee will succeed the present six-man group, of which Lieutenant General Lewis H. Brereton is chairman. The six-man committee was organized before unification of the armed forces. The seventh man under the new setup will represent the Secretary of Defense. This is a serious undertaking, but we know Don is equal to it. Incidentally, as a result of this appointment Drew Pearson gave him six inches in his "Washington Merry-Go-Round" of March 12.

Richard E. Downing has been appointed to the faculty of the science department of Boston College. — Charles B. Miller, Jr., has been promoted to management of the Winston-Salem branch of the Duke Power Company. Miller, after leaving Tech, was for three years sales engineer in Louisiana for the General Electric Company; after that he joined the Duke Power Company as sales manager at the Greenville branch in 1936. At Greenville he served successively as sales manager, electrical superintendent, and assistant manager; then followed his appointment as assistant manager at Charlotte, where he remained until his present promotion. — Dale Spoor has been promoted from dealer sales manager to sales promotion manager of the Air Reduction Sales Company, a subsidiary of Air Reduction Company, Inc.

In January, Harold A. Connor and Grace Foley, daughter of Mr. and Mrs. Frank D. Foley of Lawrence, Mass., were married. Connor is an engineer for Shell Oil Company. — Mrs. Edward Munzer, whom we remember as Martha Eiseman, is teaching chemistry at the Fieldstone School. Her daughter, Stella Edith, has just become engaged to William A. Loeb '45. The wedding will take place in June. Loeb is with the De Laval Steam Turbine Company in Trenton, N.J.

George D. Ramsay is now vice-president and general manager in charge of operations of the Lone Star Steel Company, Daingerfield, Texas. — Frank H. Wing's father, Frank E. Wing, who was a pioneer automobile dealer and a charter member of the Boston Automobile Dealers' Association, died suddenly in February in West Newton, Mass., at the age of 79. Frank is carrying on in the automobile business as a partner in the Lawton-Wing Company, Plymouth and DeSoto dealers, in Boston.

George G. Marvin, after these many years, has left his post as assistant professor of chemistry at the Institute as of February 1. Peg moves up to the United States Atomic Energy Commission as head of materials in the production department with headquarters in Washington. His work is at the policy-making level, and the Class congratulates him on his assumption of this important work. Peg's new home address in Washington is 5716 Massachusetts Avenue, Northwest. — Lachlan Mackenzie, who once made a hole in one on the 180-yard 14th while playing golf with your Secretary at the Essex County Country Club in West Orange, N.J., about the year 1924, has just made another master stroke, this time moving into the presidency of the Eastern Stain-

less Steel Corporation at Baltimore. Lachlan was formerly vice-president and has now assumed full charge of the company's operations.

We regret having to report the death of Hubert M. Gault at St. Peter, Minn., on February 4. No details are as yet available. Gault was somewhat older than most of the Class, having been born in 1891. We extend our sympathy to his family.—C. YARDLEY CHITTICK, Secretary, 77 Franklin Street, Boston 10, Mass. WHITWORTH FERGUSON, Assistant Secretary, 333 Ellicott Street, Buffalo 3, N.Y.

1923

About the time these notes appear, you should remember to do two things if you are planning to attend the 25th reunion.

First, if you are going to be in Boston on Alumni Day, June 12, you should return to the Alumni Day committee of the Alumni Association the reservation application which is sent you for tickets for the Alumni Day events. This will include the events at the Institute, noonday luncheon at the Institute, and Alumni Day dinner at the Statler in Boston. If there are ladies in your party, you make reservation for tickets for them at the same time. The reunion committee of the Class of 1923 is not handling the Alumni Day reservations because the Alumni Association itself has a well-worked-out routine for this. You make your reservations by mail and pick up your tickets at a registration desk in the lobby of the Institute on the morning of June 12.

Second, the class reunion committee will also send you an application blank which you should fill out and return in accordance with the instructions it will contain. The committee is meeting this month to develop program details, but the thing you must keep in mind is to make your reservation as early as possible for the events of the reunion proper, which will be at the Griswold Hotel, New London, Conn., from June 13 to June 16 inclusive.

Your Secretary and President Bob Shaw got together in March and got started on some of the details of the reunion program. Bob Shaw has appointed a committee on the reunion program, to which it is likely that some additional names will be added as the program work develops. Thus far the committee consists of the following: H. L. Bond, J. E. Brackett, J. E. Burchard, Joseph Fleischer, H. B. Golding, E. L. Greenblatt, F. K. Haven, O. L. Hooper, W. T. Howland, G. A. Johnson, W. S. Marder, B. E. Proctor, A. S. Redway, H. F. Russell, R. P. Shaw, D. W. Skinner, L. J. Tracy.

I have a note from Eduardo Icaza A., from Panama, indicating that he is planning to come on for the reunion. Of particular interest in his case is the fact that when Enrique Jimenez, President of the Republic of Panama, announced his 1948 cabinet, Eduardo Icaza A. was named as minister of public works.—Howard Russell had a card recently from Luis R. de Luzuriaga, who is in New York at the moment. Luis has a son who is a student at Technology and plans to attend the reunion in June.

Herman A. Bruson in February joined the Industrial Rayon Corporation as head of the

high polymer research division in Cleveland. Dr. Bruson is known for his work in the development of plexiglas as well as other research accomplishments in the field of plastics and related material.—Bernie Proctor tells me that on March 25, Earle A. Griswold was married to Esther Kathryn Bayer at the Central Presbyterian Church in New York City. They will live in Palmer as Earle (Stubby) is vice-president of the Tampax Company.

Howard Russell also had a letter in March from Ernesto B. Ledesma, who says he has recently moved his residence to Manila. As I think I previously reported, he is interested in developing contacts with reliable jobbers in electrical appliances and would also like to develop a contact with a large Portland Cement company, as he has a business which would enable him to serve in both these fields. Among others he is connected with a local company which has a controlling interest in four sugar centrals in Manila and owns a big cocoanut-oil mill. I believe he would be delighted to hear from any members of the Class who might be in a position to do business with him or advise him on contacts.—HORATIO L. BOND, Secretary, National Fire Protection Association, 60 Batterymarch, Boston 10, Mass. HOWARD F. RUSSELL, Assistant Secretary, Improved Risk Mutuals, 60 John Street, New York 7, N.Y.

1925

No less than three long clippings have been sent in concerning the appointment of Elliott E. McDowell, XV, as commissioner of correction for the Commonwealth of Massachusetts, so I can do no less than give Mac top billing here. The quotation which follows is from the Boston Herald of February 11: "Elliott E. McDowell of Wrentham, 51-year-old supervisor of industries at Norfolk State Prison Colony, will be named state commissioner of correction today . . . Gov. Bradford's selection for this important position is a thrice-decorated hero of World War I and a veteran of 14 years of administrative experience in the state prison system . . . McDowell, a past state commander of the Veterans of Foreign Wars, was born in Boston, Feb. 14, 1897. He was graduated from Mechanic Arts High School and from M.I.T., where he majored in engineering administration. During World War I he served as intelligence sergeant with . . . the 26th Division. For leading a two-man patrol across the Meuse river under fire . . . he was decorated by the United States and French governments.

"He received the American Distinguished Service Cross and the French government made him a chevalier of the Legion of Honor and awarded him the Croix de Guerre with palms. The 26th Division gave him a battlefield commission as second lieutenant. After graduation from Technology in 1925, McDowell traveled . . . supervising construction of chemical plants and oil refineries, then entered state service . . . as senior structural engineer, supervising the building of the prison colony at Norfolk. He moved from that job to take over supervision of the prison industries . . . He is married to the former Gertrude L. Vinal of

Duxbury. They have two daughters and one grandchild."

The following is from a clipping which was so closely clipped by O. B. Dennison '11, of the Gardner, Mass., Chamber of Commerce, that I am unable to identify the paper from which it came, or the date, except for the year, which is 1948: "Ralph F. Gow was elected executive vice-president of Norton Company at the annual stockholders' meeting . . . He was formerly works manager of the abrasive division [and] was elected a director in January, 1947 . . . Mr. Gow came to the Norton Company in July, 1925, following graduation from the M.I.T. [Course XV]. [He] started in the mechanical section of the research laboratory and was transferred in 1927 to production work for the abrasive division. In 1929 he was transferred to the machine division as planning engineer and (in the same year) was appointed works manager of the French plant, Compagnie Meubles de Norton near Paris, a post he held until he returned to Worcester in 1935, when he became technical secretary to George N. Jeppson, then treasurer and vice-president in charge of production.

"He was superintendent of the ceramics products division in 1937 until 1939, when he was appointed production manager. Except for the war years, Mr. Gow was works manager of the abrasives division from 1941 until his election . . . as vice-president. An Army reserve officer since 1927, Mr. Gow served as a major in the Boston Ordnance District. In 1942 he was called to the office of the Undersecretary of War, where he was a colonel jointly in the General Staff Corps and on the staff of the Commanding General, Army Service Forces in the capacity of chief of the Industrial Service Division and chief of Industrial Personnel Division. For his outstanding work he was awarded the Distinguished Service Medal and the Ordnance Commendation Ribbon . . . He is a member of the American Society of Mechanical Engineers, Military Order of the World Wars and Army Ordnance Association."

I have just exhumed a letter sent me by Doc Foster in January and mislaid until now. I quote the following paragraphs: "I was in Washington about a month ago and spent a very fine evening with the Ilsleys. It was the first time I have seen Ralph for nearly 15 years, and he and Sally did a wonderful job of entertaining me. No doubt you have some idea of the importance of the work he did for the Army during the war, but I do not think Ralph has emphasized enough the real value of the work he did. While looking over his house, I noted two certificates and accompanying decorations tucked away in a corner of a room on the second floor, and these awards, I am certain, were not handed out promiscuously to employees of the government. Ralph's contribution in the war effort, I feel, was quite substantial. He is at present connected with the Army-Navy Explosives Safety Committee and has his office at 1901 D Street, Northwest, Washington. Although I have not heard directly from George Blonsky, Professor Locke '96 had a card from Mrs. Blonsky indicating that George is still very

much alive and just before Christmas was on the road in connection with some of his mining work."

Also, among my files, I discovered a Christmas card from Louis Sheldon, who is practising as a patent attorney in Chicago, where I had the pleasure of meeting him and several other classmates about six years ago.

The Nordberg Manufacturing Company of Milwaukee, Wis., announces the appointment of Arthur G. Hall, II, as works manager. The following quotation is from the house organ: "Mr. Hall is a graduate of M.I.T. Upon completion of his schooling in 1925 he joined the Bartlett Hayward Company . . . which led to the position of works manager of the Western Gas Division of the Koppers Company at Fort Wayne, Ind."

In the last week of February, I attended the dinner of the M.I.T. Club of St. Louis held in honor of "Dean" Lobbell, or Lobby as he is more familiarly known. Among those present were three other members of the Class, the largest number from any one class. Austy Cole, whom I had not seen since graduation, operates a flour milling business at Chester, Ill., which got into the news a number of years ago when a steel bridge spanning the Mississippi at that town blew down in a windstorm. Austy remarked, "Uncle Sam has given us another one." He has been married for a number of years and has two children, a girl and a boy. He lives at a spacious place in that vicinity and invites any members of the Class living near by or passing through to stop in and visit him. Henry C. Hoar just barely made it, as he was convalescing from a serious operation. He is getting along all right now, but was very sick for several weeks. As previously reported, Hank is St. Louis sales manager for the National Tube Company with offices in the Shell Building. Constantine Zakhartchenko, who received his M.S. in Aeronautical Engineering with '25, was also there. Zack is on the staff of the McDonnell Aircraft Corporation, which is headed by James S. McDonnell, also '25.

It is not too early to begin making plans to be in Cambridge for our 25-year reunion in 1950. Put it on the agenda, men, and don't let anything prevent you from being there! — HOLLIS F. WARE, General Secretary, Post Office Box 52, Godfrey, Ill. — F. LEROY FOSTER, Assistant Secretary, Room 5-105, M.I.T., Cambridge 39, Mass.

1926

The Secretary was in Cleveland in March for a meeting of the M.I.T. Association of Cleveland, and he was very proud of the turnout of the 1926 men. Apparently every member of the Class who lives in Cleveland was present at the dinner, including Elton Staples, Frank Schreiner, Red Elmendorf, Stanley Howe, Horace Bush, and Bill Sessions. During the day, Bill Sessions arranged a small luncheon with a group of Cleveland citizens and then accompanied the Secretary to Case Institute of Technology for a visit with Keith Glennan, President of Case.

Eben Haskell has been traveling about recently and has taken advantage of his trips to meet with '26 groups in several places. In Pittsburgh, for example, he met with

Mark Greer, Ray Mancha, Wes Hemeon, and Jack Larkin. Earlier, as already reported, he had a meeting in New York and by the time this is published he will have had a meeting in Chicago, arranged by Ted Mangelsdorf. Eben is discussing the class endowment fund program with these various groups and is finding a helpful and ready response. He also expects to cover Cleveland in the course of his peregrinations.

Henry C. Gunning, contrary to earlier reports, has not severed his connection with the department of geology at the University of British Columbia. While maintaining his practice as consulting geologist in Vancouver, he still continues at the university as a half-time professor, instructing seniors and graduate students who are specializing in the study of ore deposits. — Reverdy Johnson of Westfield, N.J., has been appointed an assistant secretary of Merck and Company, Inc. A patent lawyer, he has an LL.B. from Brooklyn Law School and is a member of the New York and New Jersey bars. — William W. Hicks, who was a lieutenant commander in the Navy, is now sales representative for the Gates Rubber Company in Oklahoma City and is living in Bethany, Okla. — William S. Stark is with the American Can Company and is living at the Park Gate Hotel in San Francisco. — Newton Wakefield, another of our wartime lieutenant commanders, is now president of the Wakefield Engineering Company at Coeur d'Alene, Idaho. — JAMES R. KILLIAN, JR., General Secretary, Room 3-208, M.I.T., Cambridge 39, Mass.

1927

What I like about Bergman is his colossal ability to express himself either on his feet or on paper. A little while ago George moved from St. Louis to Knoxville, and this is the way he describes his new circumstances: "After spending about 15 years in St. Louis, the company sent me down here to the land of fried chicken, corn liquor, honeysuckle, magnolias, and hillbillies. You know the old saying, 'you can't keep a good man down,' well, at least someone thought I was good, as I am now manager of the Knoxville office of the Joy Manufacturing Company, and have Virginia, North Carolina, South Carolina, Tennessee, Kentucky, Alabama, Mississippi, Georgia, and Florida under my jurisdiction. This is great country, and I have met some fine people down here. What I like about the folks here is that they don't believe in too much hurry and bustle. You can really enjoy yourself visiting with your customers. There is plenty of good fishing in the various Tennessee Valley lakes; good hunting, too — quail, wild turkey, deer, wild boar, and bear; and then when the weather gets too cold, I always have a customer at Miami or Palm Beach. The territory is most interesting, as we have plenty of diversification, industry, coal, iron, metal mines, and other types of nonmetallic mining, and a good bit of heavy construction work; so you see we have prospects for about everything we make. I have been trying to run down Carlton Davies, as I understood he was somewhere in South Carolina. Maybe we can get together and continue where we left off at the reunion. I understand Bert Peter-

son is still at the Newport News Shipbuilding Company so will look him up the next time I am around Norfolk. I'd sure like to see some of the boys of '27 who are in these parts, and if they ever get to Knoxville, I hope they'll telephone. I should appreciate hearing from them and will make every effort to look them up when I am in their bailiwick."

Another classmate who has successfully arranged to spend his life in the South is Arthur M. Hill. The New Orleans Picayune will bring you up to date: "The appointment of Arthur M. Hill, professor of heat engineering at Tulane University, as head of the school of mechanical engineering, was announced [in February] . . . Professor Hill is a native of Hammond, La., and joined the Tulane faculty in 1929 after serving with General Electric in Lynn, Mass., Atlanta, and Schenectady, N.Y. He graduated from Tulane in 1924 and received his master's degree from . . . Technology in 1926. He was named professor of heat engineering at Tulane in 1945. For the past four years, Professor Hill has directed Southern motor vehicle fleet supervisors' training course at Tulane. A fourth annual training course will begin . . . at Tulane stadium. Professor Hill is past president of the Delta Society of Safety Engineers, former chairman and secretary of the New Orleans section of the American Society of Mechanical Engineers, and in 1942 was appointed coordinator of the civilian pilot training program at Tulane."

Now that you have read the book *I Am the Cat*, you ought to know that Rosemary Norris Kutak, the author, is a member in good standing of the Class of '27. After early years in Indiana and Ohio, Mrs. Kutak put up with all that is involved as a coed at M.I.T., and then, finding engineering pretty well taken care of, went to work for Lord and Taylor. During the war she worked for Curtiss-Wright and began writing mystery stories. She says, "When I received my degree from . . . Technology, I thought I was all set for a career as a lady engineer, and it was quite a surprise to have all that struggle with calculus and such culminate in the writing of mysteries. Yet it wasn't such a far cry after all. For the construction of a detective story is really a neat mathematical problem, a sort of differential equation in which all the little clues must add up to the one and only solution, $X=Y$. And the chemistry comes in handy, too, when my characters begin playing around with cyanide."

Passing now reluctantly to the frozen North, I am going to quote below from a long letter from Luke Bannon, whose address is 261 Rock Road, Glen Rock, N.J. I must say that I am not including the entire letter, as Luke claims that his main reason for writing is to register a complaint against the Shell Oil Company and I hope I can mollify him on that subject. The following, however, is an extract from his letter: "Really, I was much upset at missing the reunion this past summer. In fact, Ernie Hinck and I had planned to drive up together, and Ernie Law had made all arrangements with Jim Lyles. But then the old devil Circumstance poked his head

through the window and bang — just like that — the trip was off. My boss decided at the 11th hour that I should spend Saturday, both day and evening, entertaining two visiting firemen from Chicago who simply had to come and review mortgage financing — what an assignment!

"Since our last meeting quite a bit of water has run over the dam, and through the vagaries of time I have more or less ceased being a full-time architect. After several years with the Federal Housing Administration, doing soil drainage, and subdivision sewer and public health type planning, I seem to have jumped over the fence into the mortgage field and am now engaged as mortgage officer in a near-by bank and spend most of my time listening to G.I.'s who simply must have a \$5,000 house which cost \$10,000 to build and deliver (with a small profit to the builder) and try to help the applicant work out an arrangement to provide a shelter for himself and family (including a pet). . . . it provides enough of the folding green to permit a living for my family, and it also does one other thing. It allows me to have my architecture as a paying hobby. This permits me to choose the type and kind of work I want to do and then have the fun of developing ideas and making use of modern developments in material, insofar as the client's purse will allow. Hence design, drawing, and specifications writing cease to be a chore and become fun, and also I have more time for decorating, furniture design, and special features.

"Unfortunately, my older son died in active service in the Air Forces after completing his freshman year at the Wharton School. We have a younger son, Peter, who is now in high school and seems bent on becoming a law student at the University of California in Berkeley. Otherwise our family is just the same as ever — our hair a bit whiter, although just as thick (hair, not head), and we detest this winter business just a bit more each year." — Olive Bruckheimer Adkins is now living at 203 West Sixth Street, Dover, Ohio. During the war, Mrs. Adkins was a chemist with Westinghouse, in the small motors division. Now she has reverted to the status of housewife. Her husband, Raymond H. Adkins, is a banker. — Bradford R. Stetson has been named office assistant in the general production department of the Bemis Brothers Bag Company in St. Louis. He joined Bemis right after graduation and before his promotion was superintendent of the Minneapolis bag factory. — Harry N. Rising is commanding officer of the Watervliet Arsenal at Watervliet, N.Y. — Until September, 1947, Leo J. Dillon, a colonel, was executive officer to the Chief of Ordnance. At present he is on the staff of General Mark Clark as ordnance officer of the Sixth Army at Presidio 2, San Francisco.

Manager of distributor merchandising of the Viking Manufacturing Corporation is a title now owned by E. J. Pratt. His business address is 1747 Chester Avenue, Cleveland 14, Ohio. The following sketch of his activities since graduation is very interesting: "I am enclosing a card so you can see my official status. Viking makes heating and air

conditioning equipment and has international distribution. I have been here for about one year. I was graduated in Course VI, Electrical Engineering, in '27. I spent 13 years with the Consolidated Edison Company in Brooklyn, N.Y., then a five-year hitch during the war with the Du Pont Company in Wilmington, Del.; I've been with Viking since January, 1947. I was married in 1930 to a Melrose, Mass., girl, and we have three children — a boy 17, girl 11, and boy nine. We bought a house at 22101 Priddy Avenue, Euclid 17, Ohio, last year and all like Cleveland. As my work keeps me traveling most of the time, I'm not at home very much. I run across a number of M.I.T. men in my travels and lately have run into several '28 and '29 men from Boston and Philadelphia. This gives you most of the vital statistics. I'm looking forward to meeting you and other members of '27 in Cleveland."

Branching now into the International Division — Jerry Spurr, who can be reached in care of the Postmaster, A.P.O. 900, San Francisco, Calif., has sent us a real travelogue from the Philippines, as follows: "Last July, after an interesting year at the Armored School at Fort Knox, I was assigned to the Manila District, Philippine Islands. The past six months were spent at Fort Stotsenberg, Clark Field, about 50 miles north of Manila, as assistant to the District Engineer, Colonel Clarence Renshaw (U.S.M.A. '29 and M.I.T. '32). We are supervising the construction of a combined department of the Army Air Force installation under the base agreement with the Philippine Republic. Last month I was transferred to Civil Works as chief of operations and am presently living in Manila, 'the Pearl of the Orient,' which, although badly battered during liberation, is now in the midst of an active reconstruction schedule. The Civil Works program under the Corps of Engineers is primarily concerned with port rehabilitation for the city of Manila. Four contracts, including repair and extension of breakwater, street paving in the port areas, and pier reconstruction, have been let to Filipino contractors. In addition, the overall plan for the restoration of port and harbor facilities in the Philippine Islands includes projects extending from Legaspi in southern Luzon through the islands of Panay, Negros, Cebu, and Mindanao to Jolo in the Sulu Archipelago. The last named port, together with Zamboanga, is in colorful Moro country, where the young bloods occasionally run amuck, armed with a kris or barong, depending on the tribe. 'Black Jack' Pershing is still a tradition in the latter area, and the old-timers stiffen to attention at mention of the General's name.

"Incidentally, the initials M.I.T. appear to stand for what is good in engineering education out here, also; namely, Mapua Institute of Technology, though Massachusetts Tech also rates. Filipino engineers, equipment operators, and skilled tradesmen are ably performing the work under Filipino as well as American supervision, and to them belongs the bulk of credit for the present progress. My closest contact chronologically with Technology is Pete Moyano '28 from Mexico, assistant general superintendent for

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the contractor, Drake-Utah-Grove, at Clark Field. Some of you will remember Pete in the Tech show. Most of the news from the Class comes from Johnnie Boyle, who, until recently, has been in construction work with Freddie Byron. John is presently with the Edward F. Hughes Company, Inc., of Boston, a well-drilling outfit, as superintendent of construction on wells for municipal ground-water supply, principally in Massachusetts and New Hampshire. He writes that the work is of such special nature that competition is negligible, and he likes its fast tempo. The family, including Anne and our four sons, William, Robert, Hugh, and Malcolm, are still in Wellesley waiting to join me out here." — JOSEPH S. HARRIS, General Secretary, Shell Oil Company, Inc., 50 West 50th Street, New York 20, N.Y.

1928

In the April issue of *The Review* we ran a list of all men who had answered affirmatively—"I'll be at Wianno for sure on June 25, 26, and 27." Since then, there is a long list of additional men who are planning to be at the reunion. Here they are: Gilbert J. Ackerman, Carl J. Bernhardt, William D. Birch, Sidney A. Brown, Christopher M. Case, John P. Connelly, A. Starke Dempewolff, Newton S. Foster, Robert S. Harris, Thomas G. Harvey, Ames B. Hettrick, Stanley M. Humphrey, Ernest H. Knight, Everard M. Lester, Kenneth J. Mackenzie, John C. Melcher, George P. Palo, Harold F. Porter, Charles E. Richheimer, Charles A. Southwick, Jr., John Stack, Edward R. Stevens, Henry R. Wengen, Raymond L. Wofford, and Abraham Woolf. I look forward to seeing you all there. This group of people brings the total up to 43. Here's hoping that the rest of you fellows who are doubtful about being at the reunion will change your minds and come. Roland Earle's committee is working hard to have a good party, for as you know, it is always fair weather when '28 gets together!

Jack Bailey has recently left the Glenn L. Martin Company at Baltimore and is now executive vice-president of the Goslin-Birmingham Manufacturing Company, Inc., of Birmingham, Ala. Jack Luby has left Hyde Park, Mass., to become chief of fabrication control of Chance-Vought Aircraft in Stratford, Conn. Word has been received recently that Ben Miller is now professor of medicine at the George Washington Medical School and National Research Council in Washington. Jim Morse is continuing his work of moving about the country with the Shell Oil Company. Jim has recently transferred from Cleveland to become operations manager of Shell at 50 West 50th Street, New York. B. M. Putich is now working with the Bloom Engineering Company in Pittsburgh. He has recently changed his home from Baden to Ambridge, Pa.

Once again, may I remind you fellows of the forthcoming reunion and urge you all to plan for a trip to the Cape at the Wianno Club in Osterville on June 25, 26, and 27. It will be the only 20th reunion we'll ever have! — GEORGE I. CHATFIELD, General Secretary, 49 Eton Road, Larchmont, N.Y.

1933

With this edition of The Review we issue one of the last calls for everyone to be on hand for the 15th reunion at East Bay Lodge. From all indications it looks like a bang-up week end with a good attendance. Plan your time so that you can be with us on the week end of June 10 to 12. You will receive details by mail. If you have not made reservations, please do so now—we should like to have everyone there, and a few names are still missing.

Your Secretary has been accumulating information over the past few months but has been rather lax in getting it to The Review and will therefore endeavor to catch up before you can get at me in person. Part of this information is old but it will be news to some—the process takes quite a long time.

Louis D. Alpert has been named assistant to the Pacific Coast general manager of the Federated Metals Division of the American Smelting and Refining Company. He has been with Federated since 1935 and late in 1942 was appointed superintendent of the San Francisco plant (my competitor). Jack Andrews is still with the General Cable Corporation and living in Westfield. Jay Baker is with the Standard Oil Company of New Jersey in the foreign refining department covering Asia Minor. Vern Bowles writes: "After 11 years with the Lummus Company, I resigned to join the refining engineering division of the Socony Vacuum Oil Company as assistant chief engineer in charge of all process matters (address: 26 Broadway, New York City). I've been living for the past four years in Rye, N.Y., where I have been remodeling a large old property and finally have it in shape." Charles Cashman is back with Crocker, Burbank and Company, paper manufacturers in Fitchburg, Mass., as a chemical engineer. He is married and has a three-year-old daughter. Dominic J. Chiminello of Quincy, Mass., is now a chemical engineer and has his own concern in Boston. We picked up this information last fall from a newspaper clipping outlining the Quincy school board election, in which Chiminello was a candidate. Rodney Chipp is now with Dumont Television, New York City, as assistant chief engineer. Dill Collins is with the Hudson Lamp Company, Arlington, N.J., specializing in Christmas tree lights.

Bob Dillon is with Carbide and Carbon Chemicals in Galveston, Texas. He has one daughter. James M. Dunlap of Charleston, W.Va., is director of guidance services for the Kanawha County board of education. Pierre S. du Pont, 3d, is a chairman of the second national planned parenthood campaign. Joseph J. Dysart has been appointed division engineer of Pan American World Airways' Atlantic sector. He has been with Pan American since 1935 in many of their branches. He has two children. Leslie S. Fletcher was appointed technical director of Sam Tour and Company, New York City, on being retired from the Regular Army for a physical disability after 23 years of commissioned service. Tom Galvin had a new daughter born last fall and is now living in Reading, Mass. Paul F. Genachte is with Amitas, New York City, in the en-

gineering department, after spending most of his time previously in Belgium and as manager of the Mexican Light and Power Company in Mexico City. Bob Heggie is with American Chicle as head of research and development. He has traveled very widely for the company. Allan Hinkle drops a note from the Naval Hospital in Chelsea, Mass. He was in the Navy from 1943 to 1946 with various aircraft carriers in the Atlantic and the Pacific doing fighter-direction and radar work. He picked up the tuberculosis bug and is confined at the Naval Hospital at the present time. Drop him a line. Outerbridge Horsey, according to a State Department release, has been appointed to Rome as first secretary and consul. He has been a foreign service officer since 1938 and has served in Naples, Budapest, Belgrade, Madrid, and Lisbon.

George Isserlis drops a note on the letter-head of the Serle Dry Goods Company, having abandoned engineering for the business world. T. C. Johnson is with the refrigerating machine engineering division of the air conditioning department of the General Electric Company at Bloomfield, N.J. Johnson has been with General Electric since 1934. Leonard J. Julian has worked in the Boston Naval Shipyard since 1939 except for a spell of service. He is presently industrial engineer in a new division of the shipyard. In the service he completed his duty with the rank of lieutenant colonel. He is married and has two children. Edward W. Kimbark, professor of electrical engineering at Northwestern University, recently planned the Mid-West Power Conference in Chicago. G. W. King is with Arthur D. Little. Bernard Lapidus, after three years in the Pacific as an Army captain in the Medical Department, has now taken up a full-time position in the Veterans Administration out-patient clinic in Boston, specializing in internal medicine. F. H. Mac Duff, Lieutenant Colonel, U.S.A., in a rather old newspaper clipping, was reported to be at the Air Command and Staff School of the Air University at Maxwell Field, Alabama. Mal Mayer is still connected with the Schwartz Laboratories as a consultant working on fine organic chemicals. He has three children. Alexander J. Minkus was married to Regis Lyons in September, 1947. Cal Mohr of 902 McKinnon Avenue, East Liverpool, Ohio, is now with the Patterson Foundry and Machine Company of Pittsburgh, which makes chemical processing equipment. Ken Moslander is with Linde Air Products as chief engineer.

Don Neil, after 10 years in the Army, is an importer and wholesaler of china and glass with Paul A. Straub and Company. A very interesting note from S. E. Paananen, now at Kenmore, N.Y., tells us that he was with Curtiss-Wright from 1936 to 1940, when he joined Bell Aircraft, working on all types of aircraft in a number of their plants and in his latest capacity on the manufacture of helicopters for commercial, military, and experimental projects for the armed forces. He was married in September, 1936, has one daughter, and finally found a house in Kenmore, N.Y., where his family joined him. Edward C. Peterson has resigned as town manager of the town of Middleboro,

Mass., to become city manager of Portsmouth, N.H. He is married, has two children, and served in the Pacific during the past war. J. C. Raen has recently been retired from the Army after 29 years of service and is now connected, as general manager of research, with the Universal Oil Products Company at Riverside, Ill. Bill Rand is now assistant director of the Stanford Research Institute in California. Leighton Rickards is at the Special Devices Center of the Office of Naval Research at Port Washington, N.Y., as is Art Hungerford, who is head of the radar section of the same organization. Bob Ripin has been in England for nine years. His current address is the Old Rectory, Rushock near Droitwich, Worcester, England. He is married and has three daughters and now, as an agent for farm implements, is running two factories manufacturing metal goods.

Robert G. Seyl announces the establishment of the Seyl Laboratories, consultants on corrosion, in Chicago. O. H. Somers is with the Standard Gage Company in Poughkeepsie, N.Y., in charge of quality control. Harry Steinman is now in Baltimore with the Public Health Service. Doug Stewart, after many years with Ingersoll-Rand, last as sales engineer in Rochester, has established there his own business under the name of the Universal Bottled Gas Corporation. I. Harry Summer sends a note from Chicago, where he has been transferred by the Lerner Shops to manage their midwest children's branch. Bob Tripp is chief engineer with the Farrand Optical Company, New York City. A suggestion of the post-war research activities of John Trump may be gleaned from his article, "Roentgen Rays against Cancer" in the December Review. Dick Valentine is still in charge of the Cleveland office of the New Departure Division of General Motors. Bob Way works in the purchasing department at Colgate-Palmolive-Peet. Beau Whitton announces the arrival of a new baby girl in their house on March 5, making it two girls and a boy now. He is still with the Southeastern Construction Company at Charlotte, N.C. Arthur Wolf writes on the letterhead of the National Security Resources Board, where he is working as special assistant to Mr. Hill on rubber, chemicals and plastics, with a very interesting previous background. He was married in 1942 and has three children. Charles P. Woods is vice-president and treasurer of Cornelius du Bois and Company, Inc., a new market and opinion research firm recently opened at 551 Fifth Avenue, New York City. Charlie was formerly with Dun and Bradstreet.

That is all for this session. See you all at East Osterville to get the story in person.
—GEORGE HENNING, JR., General Secretary, Belmont Smelting and Refining Works, Inc., 330 Belmont Avenue, Brooklyn 7, N.Y.
ROBERT M. KIMBALL, Assistant Secretary, Room 3-208, M.I.T., Cambridge 39, Mass.

1934

Dan Strohmeier was recently appointed vice-president in charge of the shipbuilding division of the Bethlehem Steel Company. Dan has spent his entire business career with Bethlehem's shipbuilding division. He

began with the hull department at Quincy, Mass., in 1934 and was transferred to the estimating department in 1935. A year later he was named as technical assistant and transferred to the New York office in that capacity in 1939. He was on the executive staff of the division during Bethlehem's wartime ship construction program, when 1,127 naval and merchant craft were turned out — a world's record in private shipbuilding. He also served as an industry representative on the government's wartime Shipbuilding Stabilization Committee and on the shipbuilding commission of the National War Labor Board.

Louis P. Holladay, 3d, has been appointed manager of sales development in the chlorine products division of the Du Pont Company's Electrochemicals Department. Lou, who began with the company in 1934 as a chemist in the analytical laboratory of the Philadelphia plant of the Grasselli Chemicals Department, will be concerned with sales of perchloroethylene, trichloroethylene, methyl chloride, methylene chloride, and chloroform. In 1941, he became a development engineer in the Electrochemicals Department and in 1944, a technical development investigator, from which position he was promoted to his present post. — JOHN G. CALLAN, JR., General Secretary, 184 Ames Street, Sharon, Mass. ROBERT C. BECKER, Assistant Secretary, Chile Exploration Company, Chuquicamata, Chile.

1938

To begin with, we have one pleasant item — the engagement of Nancy Wilson of Lake Forest, Ill., to Scott Lyon, with the wedding planned for June — and one sad one — the death of Leonard Stearns on January 4 at the age of 33. Leonard was a Malden boy. After graduation from Course IX-A at the Institute, he went to the Missouri School of Mines and secured his M.A. He had worked at Raytheon during the war and recently returned there from a position in Hartford. He leaves his father, a brother, and his wife, Frances Ziner Stearns.

La Verne Woerner, who worked for his master's degree in Course X during our last two years, has taken a temporary position teaching chemistry at Marietta College in Ohio. — R. B. Nelson of the General Electric Company's research laboratory, who took his doctor's degree in Physics with us, was mentioned in the news in December as lecturer on magnetrons in an electronics discussion held by the American Institute of Electrical Engineers in the Pittsfield high school. — Toward the end of 1947, Herbert Mansfield, who became a master of science in 1938, was named assistant executive officer of the Seattle Port of Embarkation.

The remaining news has to do with regular members of the Class. Donald Barnaby has been appointed assistant to the president of Canadian Line Materials, Ltd., in Toronto. — Samuel A. Steere, a major in the Air Forces, is now taking a course in "Engineering Sciences" at the Air Force Institute of Technology at the Wright-Patterson Air Force Base in Dayton, Ohio, headquarters, as you know, of the Air Matériel Command. During the war, Major Steere served as a B-26 pilot in the European theater. Since

then he has been stationed in the rocket unit of the power plant laboratory at the Wright-Patterson Base. — Henry Mudd has been appointed general manager of the Cyprus Mines Corporation in Los Angeles and of its two subsidiaries, the Coronado Copper and Zinc Company and Compagnia Minera Acme. — Reeves Morrisson is teaching an evening course in gas turbines and jet propulsion at Hillyer College in Hartford, Conn., one of two courses being given at the request of local aircraft engineers. Since 1940, Morrisson has been a member of the research departments of the United Aircraft Corporation and the Pratt and Whitney Aircraft Corporation. — Harold McCrensky, for the past decade a consultant in metallurgy and chemical engineering, has opened an office in Fitchburg, Mass., under the name of the Harmac Development Company.

According to "VI-A News," John Craig is this year at the Bell Telephone Labs, his current assignment being on radio-telephone equipment design, especially the new mobile service. He prepares manufacturing requirements and specifications for use by Western Electric and associated telephone companies. — Given Brewer of New Bedford, Mass., has joined the staff of E. Anthony and Sons, Inc., and the Bristol Broadcasting Company in an engineering capacity, his work to include expediting and production in the various businesses connected with these companies. Brewer was for four years in the structures research department of Lockheed Aircraft Corporation in Burbank, Calif., for two years at the Willow Run bomber plant of the Ford Motor Company at Ypsilanti, Mich., and subsequently with Consolidated Vultee Aircraft Corporation; for the last two years he has been a consulting engineer in the field of structural testing and design.

Three releases from the Boeing Aircraft Company and the Moses Lake Air Force Base in the state of Washington describe the unique experience of a member of our Class, Robert Robbins. Robbins is the first man in the world to have piloted on its test flight a large multiengined airplane designed with radically swept-back wings — the new Boeing XB-47. When it was over, the new craft made a wide, slow approach to the base in very bright sunshine and landed conventionally like a big airliner. "I felt as much at home in it as in a B-29," said Robert. "It's no work to fly an airplane like that," he added. "I was surprised how easily it handled." Robbins went on to say that while the tasks to be performed on a maiden flight are tremendous, the Stratofortress handled so easily that both he and his co-pilot, Scott Osler, had had time to comment on the weather, the scenery below, and the quality of pictures that the accompanying photo plane should be getting. They termed the flight "highly successful."

On this first 52-minute flight preliminary checks were made of control approaches to stalling speed, unsymmetrical power conditions, operation of mechanical equipment, and general flight characteristics. All proved satisfactory. Immediately after take-off and a preliminary control check, they climbed speedily to an altitude of 15,000 feet eastbound over the Cascade Range, where they throttled the engines sharply and continued

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to climb to 16,500 feet. After further checking of controls, stability, and other flight characteristics, they made four "practice landings" at various speeds while still high over eastern Washington, then came in to a perfectly executed landing at Moses Lake. Relaxed and matter-of-fact, Robbins concluded the two-hour-long, detailed engineering postflight conference with the statement, "Generally, I am very well pleased with the plane, if that hasn't been evident already." One of the officers at the field who asked him, "When are you ready to go again?" got his answer when Robbins said, "Shall I do it now? Have you got the fuel on hand?"

This year, 1938 is on the loose again. Your participation is all we need to make Reunion X a memorable occasion. Your committee has worked up a program which will enable you to relive your years at Tech, will give you an opportunity to catch up on contemporary class history and to observe in person the battle of the bulge(-ing waistline and receding hairline). Al Wilson, in charge of hotel arrangements, passes on to you the facts. The jamboree will begin on Thursday afternoon, June 10, and run through Saturday morning, with a transfer of activities to Cambridge for Alumni Day, June 12. The setting will be the Mayflower at Manomet Point in Plymouth, Mass. As for your wife, we'll be glad to see her. A separate floor is to be reserved for married couples, and there'll be a special program for the girls, too. Dress will be strictly informal. The tariff, at \$30 a head, includes room, meals, beer, gratuities, and a grand memento of Reunion X. A swimming pool, ocean bathing, tennis, badminton, golf will be available. For the final touch, a long-range weather forecast promises the real McCoy.

Harry Hollander, who is running the big dinner on June 10 and the stag party on June 11, has lined up some terrific entertainment. And the program director is running some tournaments (with plenty of prizes) for both athletes and brown-baggers. Bert Grosselfinger, in his capacity of class statistician, is bringing two adding machines, an I.B.M. electronic calculator, and two blondes. All politicians are respectfully invited: new elections for class officers are on the agenda. Now, all hotels have good rooms and other rooms not so desirable. Although the Mayflower, like most, has varying room rates, you pay an averaged rate — one price for all. The first reservation takes the bridal suite, and right down the line. So, act now. — DALE F. MORGAN, General Secretary, Carbide and Carbon Chemicals Corporation, 30 East 42d Street, New York, N.Y. ALBERT O. WILSON, JR., Acting Assistant Secretary, 32 Bertwell Road, Lexington 73, Mass.

1943

Plans for the fifth reunion for the Class are progressing rapidly. We have formed a committee consisting of Bob Maxwell, Ken Wedle, Dick Feingold, Chris Matthew, Fred Perry, and your Secretary to make final decisions on general matters and to work out the details of the dinner. To date, I have more than 260 replies from the double postal card mailed early in February, and of these,

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etary, Mellon Hall C-41, Harvard Business School, Boston 63, Mass. MALCOLM G. KISPERT, Assistant Secretary, Room 3-243, M.I.T., Cambridge 39, Mass.

1945 (10-44)

Two of the boys whom most of you will remember have transferred from sales engineering to advertising sales. Last January, Frank McKinley joined the sales staff of the Reinhold Publishing Corporation. *Materials and Methods* is his magazine, and his territory includes most of New York State. Dick Jorgenson has joined the same company and will be representing the American Chemical Society publications in Illinois and Michigan.

Included in the graduating class this February were two of our boys. Lincoln Richardson of Reading, Mass., was awarded his bachelor's degree in Electrical Engineering. As you probably remember, he left Technology at the end of his second year and enlisted in the Navy. After three years of service he returned to complete his course. Being on the Dean's list for five terms helped him get a job at the Instrumentation Lab in the Aeronautical Engineering Department. Charlie Seifert of Lynn, Mass., got his bachelor's in Mechanical Engineering. During his three years in the Army, he received his certificate of engineering at Lehigh and worked with several of our classmates at Oak Ridge. He expects to enter the Graduate School this fall.

Prominent among engagements in the recent social columns were the following: Anne Marie Gannon of the College of St. Elizabeth and Newark, N.J., to Frank Nolan, Jr., of South Orange, N.J.; Marvis Edwin Siegel of the Boston *Herald* editorial staff to Bob Mayer White of Dorchester; Eleanor Diamant of New Haven, Conn., and Michigan State College to Bob L. Sundblad. Frank is actively engaged in the steamship business with the Jarka Corporation in New York City. Bob White has only lately resumed his studies at the Graduate School. Bob Sundblad, after his work with the group at Oak Ridge, returned to Dartmouth for his engineering degree.

Several of the big party boys have now settled down to married life. G. Kendall Parmelee was married to Gisela M. Kranichfeld of Guilford, Conn., and Barnard College; Art A. Fowle to Mary W. Haskell of Winchester, Mass., and Katharine Gibbs School; Ted Hossfeld to Susan Hedge of Boston and Bennington College; Cort Ames, 3d, to Doris Mansur of Cambridge, Stoneleigh College and Katharine Gibbs School. Hobie Swan was married to Mary King of Springfield, Mass., and LaSalle Junior College. They will settle in Swarthmore, Pa., and Hobie will work for the Scott Paper Company of Chester.

Alumni Day this year is on June 12. I will be there to buttonhole each and every '45 man who appears. If you are not going to be in Boston this June, let me hear from you by mail. If I don't see you, I hope to see your letter.—JAMES S. MULHOLLAND, JR., General Secretary, 1172 77th Street, Brooklyn 28, N.Y. Assistant Secretaries: RODERICK L. HARRIS, 2873 South Buchanan Street, Fairlington, Arlington, Va.; JAMES B. ANGELL, M.I.T. Graduate House, Cambridge 39, Mass.

106 say that the writers expect to come to the reunion. In addition, by an overwhelming majority, the Class has decided to include our wives in the gathering. On June 11, we shall begin to meet at the Campus Room at 6:30 P.M. with dinner being served at 7:30. As I write, the speaker has not yet accepted our invitation, and the mechanics of beer, liquor, or whatnot have not been settled. These details and a few others will be announced in a letter to be mailed about April 20, which will also include information about the tickets for the reunion.

In addition to many very welcome suggestions for the reunion received among your comments on the cards, there is considerable news about the Class. Hans Haac says he's still single, and Bill Selke, who is likewise, is in the chemical engineering department at Yale and says that life in a university is pleasant! Dave Bennett is still in Italy and expects to be there all summer. Ed Bullerjahn is in Sweden, studying at the Royal Academy of Arts in Stockholm. Charlie Holt is at the University of Chicago, becoming an economist. Jack Karstrom saw Eliot Payson, Whitney Newton, and Charlie Gates at Aspen, Colo., a few weeks ago when he was skiing there. Bill Kittridgell writes from Savannah, Ga., telling us that he is busy making Wesson Oil and Snowdrift in that balmy part of the world. Jim Leader is with the California Research Corporation in Richmond, Calif. Morton Schultz says that his fiancée will be graduated from Bard College on June 12 and that they will be married on the 20th; hence, he can't join us at the reunion this year. Curt Smith, who has been ill for a long time, is still not working but hopes to be doing so early in the summer. Hughie Pastoriza, who is with the Radio Corporation of America selling electron microscopes, has recently made a tour of New England. Dick and Betty Haas and Betty and I had two grand evenings with Hughie.

On January 31, the former Marjorie Ann Chapin and Ken Warden were married at the First Baptist Church in Worcester, Mass. Ken's ushers were Herb Twaddle and James O. McDonough. This couple spent their honeymoon in the Canadian Laurentians and now live in Somerville, Mass. Ken was graduated from the Harvard Business School in January. I have heard that Mr. and Mrs. Richard Tunis of Saint Davids, Pa., have announced the engagement of their daughter, Philippa Tunis Gilbert, to Frank Gardner. Also from Pennsylvania, news comes that Lydia Atherton Robinson and Charles F. Chubb, Jr., are engaged. Charlie, who was formerly in the Radiation Lab at M.I.T., is now a project engineer with the Sperry Gyroscope Company at Lake Success, N.Y.

Congratulations are in order for Mr. and Mrs. Malcolm C. Walker of Quincy, Mass., who announced the arrival of Elizabeth Joy on March 1. Robert Frey, currently with the Shell Oil Company in New York, expects to leave shortly for The Hague, Holland, where his assignment will last about two years. Walter McCarthy has been awarded the Sterling Winthrop Research Fellowship in Chemistry at Indiana University. I am very unhappy to relate that Mar-

vin C. McDermott was involved in an accident, while having an Army surplus boat towed from Daytona Beach to Miami, which resulted in the amputation of one of his legs. He is expecting to be out of action for about six months. He had planned to remodel the boat for living quarters.

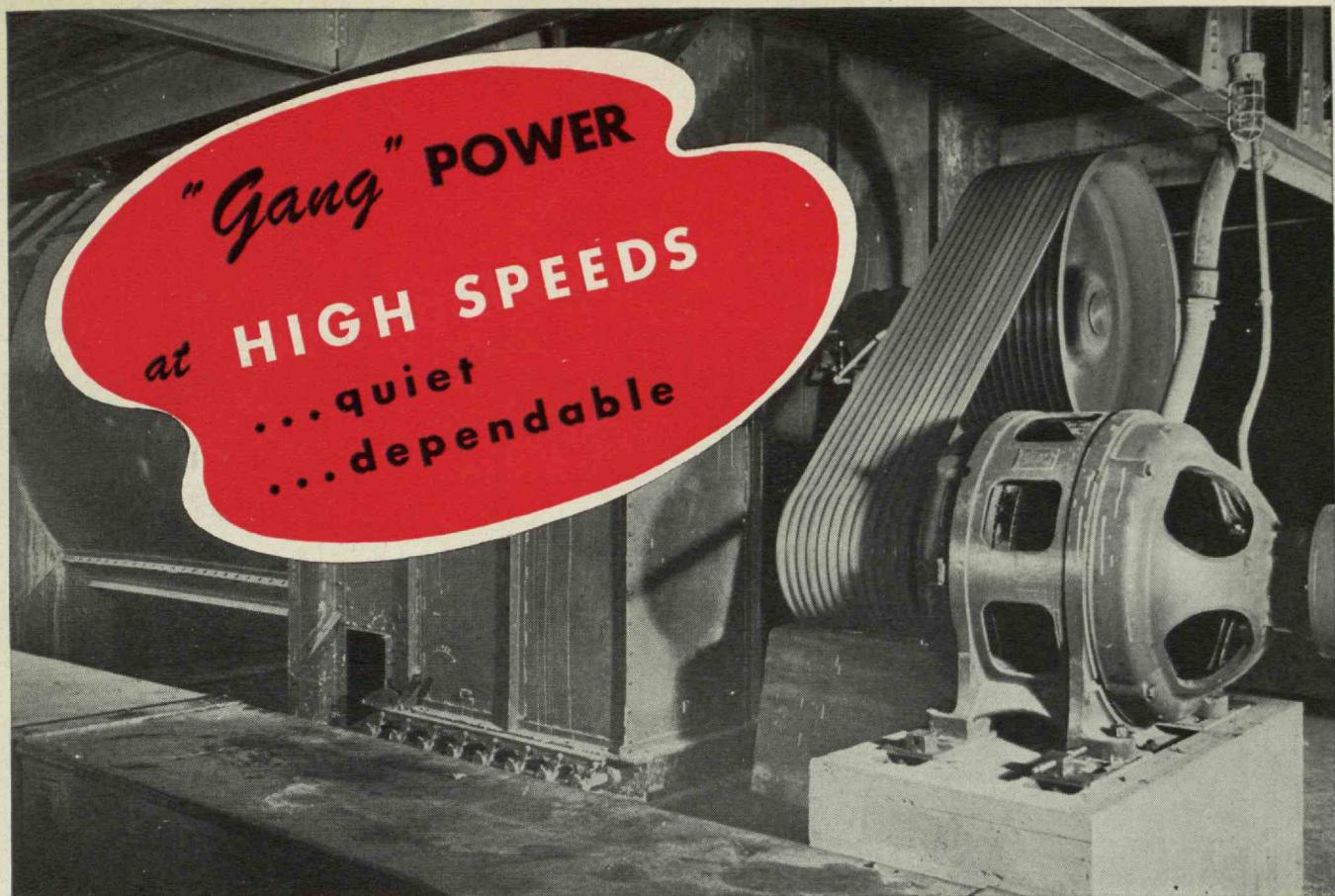
This is all for now, but don't forget the fifth reunion, and remember, "the more the merrier." So here's hoping to see you on June 11 in Cambridge.—CLINTON C. KEMP, General Secretary, Barrington Court, 988 Memorial Drive, Cambridge 38, Mass.

1944 (2-44)

Spencer Schilling has severed his connection with the United States Smelting Refining and Mining Company and taken a position with the Federated Metals Division of the American Smelting and Refining Company. He is sales engineer in the New York area with headquarters at the office in New York City. His first step in a sort of training program was a visit to the Perth Amboy plant of the company, and later he expects to spend some time in the Newark, N.J., and the Whiting, Ind., plants before returning. Sam Kahn, who received his master's degree in organic chemistry at Technology, has been added to the Cabot laboratory staff. Sam served almost four years in the European theater as a medic in the Combat Engineers. Jim Weaver of the Cabot research and development staff in Boston has been transferred to Pampa, Texas. He will spend about a year in Texas studying manufacture and quality control of carbon black under the Cabot research and development plant in the Southwest. Jill DeAmicis has been working under Russell Cowing at the New England Deaconess Hospital on detecting the presence of loose radiation rays.

Several engagements were announced during February — to begin with, that of Shirley Estelle, a graduate of Northeastern Law School and for two years with the WAVES, to Abraham Goldberg of Brookline. Frances Whitcomb of Waltham, Mass., is engaged to Paul Fowler. She is a graduate of Mount Holyoke College and now a laboratory technician at the Harvard Medical School. Edith Donaldson and Leroy Strasburger are engaged. Edith was graduated from Mount Holyoke, and LeRoy is now with the General Electric Company. Walter Swain has settled down since leaving the Institute and become engaged to Joan Barrows, who is from Plainfield, N.J.; Walt is working for the International Telephone and Telegraph Corporation. Carlotta Clark Busch of St. Louis is engaged to John Flanigan.

The latest changes of address are as follows: Bob Gillen, back from Venezuela, is working in New York; Art Komarek is in Riverside, Ill.; John Lehman has gone from Evanston, Ill., to Wayzata, Minn.; William Norman is at 34 Beaufort Gardens, London Southwest 3, England; Ed Radford is still in the Army, now stationed in Montgomery, Ala.; Paul Tchang is working for the International Harvester Company, Chicago, Ill.; Bill van Ravenswaay has left Texas for the Bahrain Islands in the Persian Gulf. He is working for the Bahrain Petroleum Company; Bill West is located in Pasadena, Calif.—WILLIAM B. SCOTT, General Sec-



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TYPE 727-A VACUUM-TUBE VOLTMETER

This general-purpose, battery-operated v-t voltmeter is for use at frequencies up to about 100 megacycles.

RANGE — 0.05 volt to 300 volts ac, in seven ranges (0.3, 1, 3, 10, 30, 100, 300 volts, full scale)

ACCURACY — With sinusoidal voltages applied, the accuracy is $\pm 3\%$ of full scale on the 0.3-volt range and $\pm 2\%$ of full scale on all other ranges. Periodic checking of the full-scale sensitivity will give corrections to be made to eliminate effects of aging on the higher voltage ranges.

WAVEFORM ERROR — On lowest ranges the instrument approximates a true square-law device. It is calibrated to read the r-m-s value of a sinusoidal voltage. On the higher voltage ranges it is essentially a peak-reading instrument calibrated to read 0.707 of the peak values and on distorted waveforms the percentage deviation from r-m-s values may be as large as the percentage of harmonics present.

FREQUENCY ERROR — Less than 1% between 20 cycles and 30 Mc. At 65 Mc the error is about $\pm 5\%$ and at 100 Mc about $\pm 10\%$.

INPUT IMPEDANCE — The input capacitance is about 16 micromicrofarads. Parallel input resistance (at low frequencies) is about 5 megohms on the lower ranges and about 3 megohms on the upper.

PRICE: \$180



TYPE 728-A D-C VACUUM-TUBE VOLTMETER

This battery-operated v-t voltmeter is designed for measuring d-c voltages in low-power circuits where no appreciable power can be taken by the meter.

RANGE — 0.05 to 3000 volts in seven ranges (3, 10, 30, 100, 300, 1000, 3000 volts, full scale)

ACCURACY — Within $\pm 3\%$ of full scale on all ranges. If the full-scale sensitivity is checked occasionally the effect of aging, on the higher voltage ranges, can be eliminated.

INPUT RESISTANCE — 1000 megohms on the ranges above 100 volts; greater than 5000 megohms on the lower

TERMINALS — Two sets of input terminals are provided; one for measurements at the 0 to 30 volts end of the range and the other for higher voltages

POLARITY — A reversing switch on the panel permits measurements with either the positive or the negative of the source grounded to the panel of the instrument.

EFFECT OF A-C — A superimposed a-c voltage of as high as 200 volts has negligible effect on meter indication

PRICE: \$155



TYPE 729-A MEGOHMMETER

This battery-operated megohmmeter is particularly useful where portability is required. It is well suited to field measurements of leakage resistance of cables and insulation.

RANGE — 2000 ohms to 50,000 megohms in five overlapping ranges

SCALE — Standard direct-reading ohmmeter calibration is used; center scale values are 1, 10, 100 and 1000 megohms

ACCURACY — Within $\pm 5\%$ of the indicated value between 30,000 ohms and 3 megohms when the central decade of the scale is used; otherwise the error is increased because of the compressed scale

TEMPERATURE AND HUMIDITY — Effects of these are negligible over normal range of room conditions (65 to 95 deg. F.; 0 to 95% relative humidity)

VOLTAGE ON UNKNOWN — Voltage applied to the unknown does not exceed $22\frac{1}{2}$ volts and varies with meter indication

PRICE: \$105

THESE three accurate, highly stable and portable meters are all battery-operated and completely self-contained. They are housed in identical walnut cabinets 11 inches by $6\frac{1}{8}$ inches by $5\frac{1}{8}$ inches in size. Their accuracy is sufficient for a wide variety of measurements both in the laboratory and in the field.

Other G-R meters include a portable a-c operated vacuum-tube voltmeter for audio and radio frequency measurements up to several hundred megacycles, a crystal galvanometer direct-reading in voltage between 30 and 1,000 megacycles, an a-c operated megohmmeter with a range of 2,000 ohms to 50,000 megohms, a counting rate meter for measuring random emanations from radio-active materials, three models of output-power meters, and an audio-frequency microvolter with an output voltage range of 0.1 microvolt to 1 volt.

G-R meters are carefully designed, correctly engineered, ruggedly constructed and accurately calibrated to insure many years of useful life.

A FEW OF EACH IN STOCK FOR PROMPT SHIPMENT

GENERAL RADIO COMPANY

90 West St., New York 6

920 S. Michigan Ave., Chicago 5

950 N. Highland Ave., Los Angeles 38

Cambridge 39,
Massachusetts